

MANUFACTURERS' RECORD

A WEEKLY SOUTHERN INDUSTRIAL
RAILROAD AND FINANCIAL NEWSPAPER.

RAILROADS IN GOOD CONDITION.

In an interview at Chicago President Stuyvesant Fish of the Illinois Central Railroad is quoted as follows:

The business of the country generally is so good that there will be no permanent depreciation in the prices of good securities. Investments in railroads will always be better than in industrial concerns, because the railways are more conservatively managed.

The railroads of this country are today in better physical condition than ever before. This very important fact is not apparent from the balance sheets of the companies. It means the ability to haul more traffic at less expense hereafter, the reduction of grades and the elimination of curves being permanent improvements.

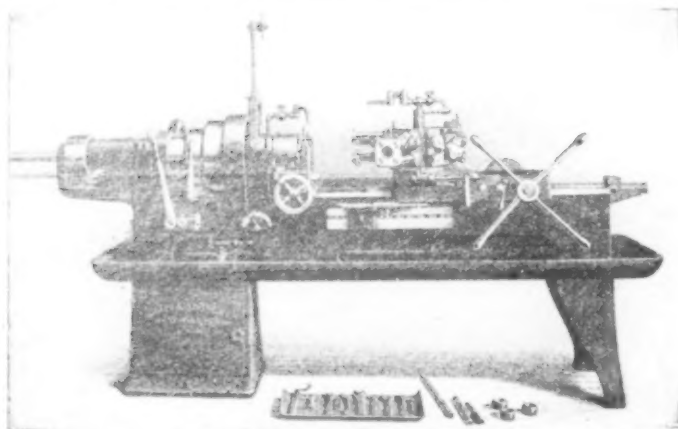
The Illinois Central does not propose to reduce the number of its employees. We expect to do a heavy business this winter, enough to keep our entire force employed. I do not expect any panic. Wall street is only scared.

THE FULL TABLE OF CONTENTS WILL BE FOUND ON PAGE 208.

VOL. XLIV.
No. 15.

\$4.00 per year.
Single Copy
10 Cents.

Baltimore, October 29, 1903.



New Model Turret Lathes.

FIVE SIZES.

$\frac{1}{2} \times 4\frac{1}{2}$ " 1x10" $1\frac{1}{2} \times 18$ " 2x26" $3\frac{1}{2} \times 36$ "

THESE MACHINES are not only adapted to the production of duplicate pieces in large lots, but their use is advantageous for the manufacture of duplicate work in lots of not more than FIVE or SIX PIECES. IT HAS BEEN DEMONSTRATED that these machines can be set up for given work in less time and with less expense for tools than any other machine of this class. Send to New York office for illustrated booklet.

PRATT & WHITNEY CO.

136-138 Liberty St., New York Works, Hartford, Conn., U. S. A.

OFFICES:

BOSTON, - - - 144 PEARL STREET.
PHILADELPHIA, - - - 21ST AND CALLOWHILL STREETS.
PITTSBURG, PA., - - - FRICK BUILDING.
CHICAGO, - - - 46 SOUTH CANAL STREET.
ST. LOUIS, MO., - - - 516 NORTH THIRD STREET.
LONDON, - - - RUCK & HICKMAN, LTD.,
2, 4, WHITECHAPEL ROAD.

The Marion Steam Shovel Company,

MANUFACTURERS
OF

Steam Shovels,
Ballast Unloaders,
Dredges and Ditchers, Etc.

We manufacture machinery in this line in all sizes and suitable for all classes of work. Where large capacity is wanted and where exceedingly hard material is encountered, we call special attention to Model "80" and Model "90." We invite the most careful investigation. For full information address

THE MARION STEAM SHOVEL COMPANY,

Marion, Ohio, U. S. A.,

or GEO. W. BARNHART, Western Manager, No. 4 Sutter Street, SAN FRANCISCO, CAL.

Interstate Corporation Record

contains Subscription List, Charter, By-Laws, First Meeting of Stockholders, First Meeting of Directors, Secretary's Minutes, Certificate, Register, Transfer and Dividend Records, Stock Ledger.

American National Bank Record

No. 1—for Bank's use when newly organized: No. 2—for conversion of state banks into national.

Stock Certificates, Bonds, Seals,

U. S. Lock Seal with Two Keys.

J. W. Middleton & Co., Publishers, Stationers,

167 Dearborn Street, CHICAGO.

"THE COLUMBIA"

MODERN LAUNDRY MACHINERY.

Latest. "Up to date." "Prices Right."

Wilson Laundry Machinery Company.

Send for Catalog R.

Columbia, Pa.



Sinclair Ironers

are the First

and Best. Sinclair Washers

are the Latest

S. H. SINCLAIR CO.

F. A. Walker, Pres.
Henry H. Horr, Treas.
W. G. Saunders, Secy

Manufacturer of LAUNDRY MACHINERY,
8 and 10 S. Canal St., CHICAGO, ILL.

Write for Catalogue "R."

Estimates cheerfully furnished.

SHARP'S Latest Styles Ironing & Washing Machinery

Complete Plants Supplied.

ADAMS LAUNDRY MACHINERY CO., 1931-1937 6th Ave., Troy, N. Y.

LAUNDRY MACHINERY, HAND OR POWER.

For Hotels, Dyehouses, Commercial Laundries and Domestic Use.

Write for Prices. A. L. DAWSON & CO., 27-31 W. Washington St., Chicago.

Newport News Shipbuilding & Dry Dock Co.

WORKS AT NEWPORT NEWS, VA., ON HAMPTON ROADS.

Equipped with two large Basin Dry Docks of the following dimensions:

	No. 1.	No. 2.
Length on top	610 feet.	527 feet.
Width on top	130 "	142 "
Width on bottom	50 "	50 "
Draught of water over sill	25 "	30 "

Shops are equipped with modern machinery capable of doing the largest work required in ship construction. Tools driven by electricity and compressed air used in constructing and repairing vessels. For estimates and further particulars, address,

C. B. ORCUTT, Pres't,

No. 1 Broadway, New York.

"BOSS" SOLID STEEL SCRAPER.



SOME STRONG MERITS:

It will work in any kind of soil, whether ploughed or not, and enters the ground as readily as a plough. Not injured by exposure to weather, and has nothing about it to get out of repair. Suited to any climate. It is without joint or seam and is made of a single sheet of steel pressed into the most suitable shape.

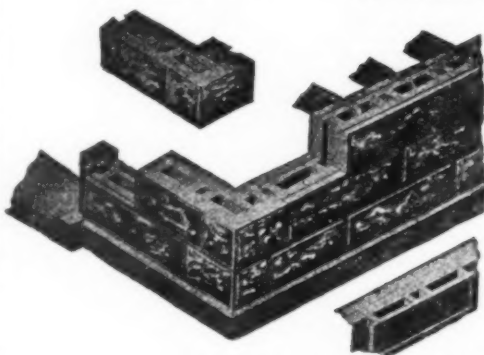
ALL KINDS OF GRADING MACHINERY.

KILBOURNE & JACOBS MFG. CO.,

Columbus, O.

HARMON S. PALMER'S METHOD OF

CONCRETE BUILDING.



A Perfect System
of Construc-
tion—

By the use of Hollow Concrete Building Blocks, produced by hand labor with new scientific and geometrically constructed machines, which pre-determine the building, obviate cutting the stone and fitting the frame, do away with the steel square and effectually supersede all methods by their wonderful simplicity.

Reward \$10—A reward of Ten Dollars given for first information of parties building with these blocks or using machines or presses that can make them, unless licensed by the Harmon S. Palmer Hollow Concrete Building Block Co., 1401 Binney Street, Washington, D.C.



LUFKIN

Steel Tapes

ARE INDISPENSABLE FOR ACCURATE WORK

The Lufkin Rule Co., - - Saginaw, Mich.

For Sale Everywhere. Send for Catalogue.

AMERICAN SHIP WINDLASS CO., - - Providence, R. I.

The "Providence" Windlasses, Capstans, Winches and other Ship Machinery.

Automatic Steam Towing Machines, Wharf Drop Gearing, Etc.

We have just completed a New Up-To-Date Iron Foundry and are prepared to supply

FIRST-CLASS CASTINGS.



WE MAKE CYPRESS TANKS—ANY SIZE OR SHAPE.

Our factory is within sight of the Cypress Forest. We therefore procure the best timber at less expense than our numerous competitors; then it naturally follows that our Cypress Tanks are superior to all others. Catalog No. 5 for the asking.

G. M. DAVIS & SON, Palatka, Fla.

Branch Office—28 Cortlandt St., New York City.

ir use
with

A.

tc.

hal

A.,

ays.

ers,

NG.

tom

C-

oncre
ced by
ntifidy
ructed
ermin
ing the
me, de
re and
ethods
ity.

g with
censed
D.C.

ARK
h.

R. L

Etc.

Cl

Ac
 Appr
 Addi
 Bell
 Ac
 Bush
 Wale
 Wood
 Ac
 Davis
 Ac
 Carol
 Robert
 Valk
 Ag
 Price
 Robert
 Ag
 Paru
 Henci
 Al
 West
 West
 Al
 Amer
 Brown
 Hard
 Inger
 McKie
 Price
 Band
 Stillw
 Sulliv
 Westin
 Al
 Dale
 Al
 etc
 Pittab
 Am
 Peter
 Am
 Stand
 Am
 Bailey
 Hiert
 Ryan
 Van D
 Am
 Hiert
 Ryan
 App
 Appra
 Myers
 Arc
 Carlton
 Dyer, L
 Gasser
 McKie
 Makepe
 Milbur
 Fraray
 Hama
 Shaw, L
 Shelle
 Wale
 Wheel
 Arc
 Belmon
 Buffal
 Chessa
 Bureka
 Gainee
 Lomban
 Sanford
 Schreite
 Virgin
 Ari
 Capital
 Ash
 Souther
 Asph
 Armitag
 Gulf Re
 Habb
 Bag
 Americ
 Balley,
 Columbi
 Ball
 Federal
 Hani
 Contin
 Exchang
 First Na
 Flak & B
 Georgia
 Hambie
 Hibernia
 Hornada
 Internat
 Lisman,
 MacRae,
 Martin &
 McAdoo
 Merchan
 Merchan
 Middend
 Palmetto
 Richmon
 Savannah
 Thomson
 Tobey &
 Trak, S
 U. S. Mo
 William
 Bar
 Bourne-F
 Globe Ro
 Milton M
 Old Dom
 Passaic S
 Bell
 Alexand
 Americ
 Bailey-L
 Baltimo
 Boston B
 Caldwell
 Cameron
 Columbi
 Cotton S
 Freese, R
 Gandy B
 Hartfeld
 Lombard
 Main B
 Meier's,
 Miller O
 N. J. Car
 Perion
 Price, S
 Romend
 Shultz B
 Voorhee
 Whiteh
 Bell
 Bartlett
 Caldwell
 Federal
 Jeffrey
 Link-B
 Taylor
 Bell
 Americ
 Bell
 Shultz B
 Bell
 Diamon
 Bell
 Shultz B

Classified Index of Articles Advertised

FOR ALPHABETICAL INDEX See Page 32

Accountants.
Appraisal & Audit Co. of America, Chicago, Ill.
Audit Co. of New York, The New York, N. Y.
Bell, Robt. Ross Birmingham, Ala.

Accumulators.
Bushnell Press Co., G. H., Thompsonville, Conn.
Watson-Stillman Co., New York, N. Y.
Wood, R. D. & Co., Philadelphia, Pa.

Acetylene Gas Generators.
Davis Acetylene Gas Co., Elkhart, Ind.

Acid Chambers.
Caroline Iron Works, Baltimore, Md.
Robertson Mfg. Co., James, Baltimore, Md.
Valk & Murdoch Iron Works, Charleston, S. C.

Agents. (Manufacturers.)
Price, S. M., Machinery Co., Norfolk, Va.
Roberts, J. J., & Co., Newport News, Va.

Agricultural Implements.
Farquhar Co., Ltd., A. B., York, Pa.
Hesch & Dromgold Co., York, Pa.

Air Brakes.
Westinghouse Air Brake Co., Pittsburgh, Pa.
Westinghouse Traction Brake Co., New York, N. Y.

Air Compressors.
American Air Compressor Works, New York, N. Y.
Brown-Cochran Co., Lorain, Ohio.
Hardie-Tynes Mfg. Co., Birmingham, Ala.
Ingersoll-Sergeant Drill Co., New York, N. Y.
McKiernan Drill Co., New York, N. Y.
Price, S. M., Machinery Co., Norfolk, Va.
Rand Drill Co., New York, N. Y.
Stillwell-Bierce & Smith-Vaile Co., Dayton, O.
Sullivan Machinery Co., Chicago, Ill.
Westinghouse Traction Brake Co., New York, N. Y.

Air Motors.
Duke Engine Co., Grand Haven, Mich.

Aluminum Products. (Bars, Sheets, Tubes, etc.)
Pittsburg Reduction Co., Washington, D. C.

Ammunition.
Peters Cartridge Co., Cincinnati, O.

Angle Power Transmitters.
Stadler, A. Estate, Columbia, O.

Anti-Friction Metals.
Bailey-Lebby Co., Charleston, S. C.
Hertz, Theo., Metal Co., St. Louis, Mo.
Ryan, J. J., & Co., Chicago, Ill.
Van Dusen, E. W., Co., Cincinnati, O.

Antimony.
Hertz, Theo., Metal Co., St. Louis, Mo.
Ryan, J. J., & Co., Chicago, Ill.

Appraisers. (Mfg. Plants, etc.)
Appraisal & Audit Co. of America, Chicago, Ill.

Myers, Finney & Morrison, Richmond, Va.

Architects.
Cotton, Charles W., & Co., Atlanta, Ga.
Dyer, D. H., & Son, Fall River, Mass.
Gamer, Paul, Tampa, Fla.
McMichael & Hunter, Charlotte, N. C.
Makepeace, C. R., & Co., Providence, R. I.
Milburn, Frank F., Columbia, S. C.
Prayer, C. A. M., & Co., Providence, R. I.
Ramsay, John E., & Co., Salisbury, N. C.
Shaw, Fred, G., Augusta, Ga.
Sheffield, O. H., & Co., Atlanta, Ga.
Whaley, W. B., & Co., Columbia, S. C.
Wheeler & Rung, Charlotte, N. C.

Architectural Iron Work.
Belmont Iron Works, Philadelphia, Pa.
Buffalo Wire Works Co., Buffalo, N. Y.
Chesapeake Iron Works, Baltimore, Md.
Eureka Supply Co., Chattanooga, Tenn.
Gainesville Iron Works, Gainesville, Ga.
Lombard Iron Works & Supply Co., Augusta, Ga.
Sanford-Day Iron Works, Knoxville, Tenn.
Schreiber, L., & Sons Co., The, Cincinnati, O.
Virginia Bridge & Iron Co., Roanoke, Va.

Art Glass.
Capital City Art Glass Works, Atlanta, Ga.

Asbestos.
Southern Pipe Covering Co., Richmond, Va.

Asphalt.
Armstrong Mfg. Co., Richmond, Va.
Gulf Refining Co., Pittsburgh, Pa.

Babbitt Metal. (See Anti-Friction Metal.)

Bags, Rope and Twine.
American Mfg. Co., New York City.
Bailey, John T., & Co., Philadelphia, Pa.
Columbian Cordage Co., Auburn, N. Y.

Balls. (Steel.)
Federal Mfg. Co., Cleveland Ball Factory, Cleveland, O.

Bankers and Brokers.
Continental Trust Co., Baltimore, Md.
Exchange Bank, Mason, Ga.
First National Bank, Richmond, Va.
Flak & Robinson, New York, N. Y.
Georgia Railroad Bank, Augusta, Ga.
Hambleton & Co., Baltimore, Md.
Hibernia Bank & Trust Co., New Orleans, La.
Horaday, J. P., & Co., Cincinnati, O.
International Trust Co., Baltimore, Md.
Lisman, F. J., & Co., New York, N. Y.
MacIsaac, Hugh, & Co., Wilmington, N. C.
Martin & Bro., Augusta, Ga.
McAdoo, Calvin, N., Greensboro, N. C.
Merchants & Farmers' Nat'l Bk., Charlotte, N. C.
Merchants National Bank, Baltimore, Md.
Middendorf, J. Wm., & Co., Baltimore, Md.
Palmetto Bank & Trust Co., Columbia, S. C.
Richmond Trust & Safe Deposit Co., Richmond, Va.
Savannah Trust Co., Savannah, Ga.
Thompson, Henry W., Spartanburg, S. C.
Tobey & Kirk, New York, N. Y.
Trank, Spencer, & Co., New York, N. Y.
U. S. Mortgage & Trust Co., New York, N. Y.
Williams, John L., & Sons, Richmond, Va.

Bar Iron and Steel.
Barnes-Fuller Co., Cleveland, O.
Globe Rolling Mill, Cincinnati, O.
Milton Mfg. Co., Milton, Pa.
Old Dominion Iron & Nail Works Co., Richmond, Va.
Pascall Steel Co., Paterson, N. J.

Belting.
Alexander Bros., Philadelphia, Pa.
American Supply Co., Providence, R. I.
Bailey-Lebby Co., Charleston, S. C.
Baltimore Belting Co., Baltimore, Md.
Boston Belting Co., Boston, Mass.
Caldwell, H. W., & Son Co., Chicago, Ill.
Cameron & Barkley Co., Charleston, S. C.
Columbia Supply Co., Columbia, S. C.
Cotton States Belting & Supply Co., Atlanta, Ga.
Freese, E. M., & Co., Galton, O.
Gandy Belting Co., Baltimore, Md.
Hartfelder-Garbutt Co., Savannah, Ga.
Lombard Iron Works & Supply Co., Augusta, Ga.
Main Belting Co., Philadelphia, Pa.
Meier's, Joseph, & Son, New York, N. Y.
Miller Oil & Supply Co., Indianapolis, Ind.
N. J. Car Spring & Rubber Co., Jersey City, N. J.
Pearless Rubber Manufacturing Co., New York, N. Y.
Price, S. M., Machinery Co., Norfolk, Va.
Remondale-Roadway Belting & Mfg. Co., Newark, N. J.
Shultz Belting Co., St. Louis, Mo.
Voorhees Rubber Mfg. Co., Jersey City, N. J.
Whitehurst Belting Co., Baltimore, Md.

Belting. (Chain.)
Bartlett C. O., & Snow Co., Cleveland, O.
Caldwell, H. W., & Son Co., Chicago, Ill.
Federal Mfg. Co., Cleveland, O.
Jeffrey Manufacturing Co., Columbus, O.
Link-Belt Engineering Co., Nicetown, Phila., Pa.
Taylor Iron & Steel Co., High Bridge, N. J.

Belt Fasteners.
American Supply Co., Providence, R. I.

Belt Lacing.
Shultz Belting Co., St. Louis, Mo.

Belt Lacing Machines.
Diamond Drill & Machine Co., Birdsboro, Pa.

Belt Preserver.
Shultz Belting Co., St. Louis, Mo.

Blower. (Argand Steam.)
McClave-Brooks Co., Scranton, Pa.

Blowers. (Pressure.)
Allington & Curtis Mfg. Co., Saginaw, E. S., Mich.
American Blower Co., Detroit, Mich.
Dixie Mfg. Co., Baltimore, Md.
Sturtevant Co., S. F., Boston, Mass.

Blowers and Exhaust Fans.
Allington & Curtis Mfg. Co., Saginaw, E. S., Mich.
American Blower Co., Detroit, Mich.
Andrews & Johnson Co., Chicago, Ill.
Cincinnati Exhaust & Blow Pipe Co., Cincinnati, O.
Crosby St. Gage & Valve Co., Boston, Mass.
Dixie Mfg. Co., Baltimore, Md.
Hartford Blower Corp., Hartford, Conn.
Southwark Foundry & Machine Co., Phila., Pa.
Stocker, George J., St. Louis, Mo.
Sturtevant Co., S. F., Boston, Mass.

Blue Print Apparatus.
Pittsburg Blue Print Co., Pittsburgh, Pa.

Blue Prints.
Myers, Finney & Morrison, Richmond, Va.

Bobbins.
Sherwood Bobbin & Mfg. Co., Greensboro, N. C.

Boilers.
Alexander, S. B., Jr., Co., Charlotte, N. C.
Atlas Engine Works, Indianapolis, Ind.
Babcock & Wilcox Co., New York, N. Y.
Baltimore Engine Co., Baltimore, Md.
Brownell & Co., The, Dayton, O.
Cameron & Barkley Co., Charleston, S. C.
Chicago House Wrecking Co., Chicago, Ill.
Codd Co., E. J., Baltimore, Md.
Cooper, C. & G., Co., Mt. Vernon, O.
Farquhar Co., Ltd., A. B., York, Pa.
Fricks Co., Waynesboro, Pa.
Gibbs, W. H., & Co., Columbia, S. C.
Hartfelder-Garbutt Co., Savannah, Ga.
Hartley Boiler Works, Montgomery, Ala.
Keeler Co., E., Williamsport, Pa.
Lefel, James, & Co., Springfield, Ohio.
Lombard Iron Works & Supply Co., Augusta, Ga.
McGuffie & Kounts, Alliance, O.
Mechanicsburg Iron Works, Charlotte, N. C.
Murphy, John H., New Orleans, La.
Murray Iron Works Co., Burlington, Iowa.
Petroleum Iron Works Co., Washington, Pa.
Phoenix Iron Works Co., Meadville, Pa.
Price, S. M., Machinery Co., Norfolk, Va.
Robbins, A. O., Charlotte, N. C.
Savannah Locomotive & Car Works, Savannah, Ga.
Schofield, J. S. Sons Co., Macon, Ga.
Smith-Courtney Co., Richmond, Va.
Southern Eng. & Boiler Works, Jackson, Tenn.
Stirling Co., Chicago, Ill.
St. Louis Iron & Machine Works, St. Louis, Mo.
Union Iron Works Co., Selma, Ala.
Valk & Murdoch Iron Works, Charleston, S. C.
Vogt, Henry, Machine Co., Louisville, Ky.
Walke, Henry, Co., Norfolk, Va.

Boiler Tube Cleaners. (See Flue Scrapers.)
Gem Mfg. Co., Pittsburgh, Pa.

Bolts, Nuts, Rivets and Nails.
Diamond State Steel Co., Wilmington, Del.
Hamel, John J., & Co., Pittsburgh, Pa.
Milton Mfg. Co., Milton, Pa.
Hoopes & Townsend Co., Philadelphia, Pa.
Old Dominion Iron & Nail Works Co., Richmond, Va.

Bonds. (Fidelity.)
Fidelity & Deposit Co., Baltimore, Md.

Bookkeepers.
Audel, Theo., & Co., New York, N. Y.

Boasting Outfits.
Viller Mfg. Co., Milwaukee, Wis.

Brakes.
Westinghouse Traction Brake Co., New York, N. Y.
Westinghouse Air Brake Co., Pittsburgh, Pa.

Brass Goods.
Bailey-Lebby Co., Charleston, S. C.
Buckeye Iron & Brass Works, Dayton, O.
General Fire Extinguisher Co., Providence, R. I.
Ludlow-Saylor Wire Co., The, St. Louis, Mo.
Lunkenheimer Co., Cincinnati, O.
Pittsboro Machine & Supply Co., Baltimore, Md.
Price, S. M., Machinery Co., Norfolk, Va.
Simmons, John, Co., New York City.
Van Dusen, E. W., Co., Cincinnati, O.

Brewers' Machinery.
Viller Mfg. Co., Milwaukee, Wis.

Brick.
Georgia Vitriol Brick & Clay Co., Augusta, Ga.
Kriegshaber, V. H., Atlanta, Ga.
Powhatan Clay Mfg. Co., Richmond, Va.

Brick Bonds.
Union Brick Bond Co., Pittsburgh, Pa.

Brick and Clayworking Machinery and Supplies.
Carnell, George, Philadelphia, Pa.
Furnholts Brick Machinery Co., St. Louis, Mo.
Freese, E. M., & Co., Galton, O.
Gibbs, W. H., & Co., Columbia, S. C.
Huennekes, H. & Co., New York, N. Y.
Schwarz System Brick Co., New York, N. Y.
Steele, J. C., & Sons, Statesville, N. C.
St. Louis Iron & Machine Works, St. Louis, Mo.

Bridges.
Belmont Iron Works, Philadelphia, Pa.
General Supply & Construction Co., New York, N. Y.
Kriegshaber, V. H., Atlanta, Ga.
Prink & Hazen, Baltimore, Md.
Pascall Steel Co., Paterson, N. J.
Scaife, Wm. B., & Sons, Co., Pittsburgh, Pa.
Virginia Bridge & Iron Co., Roanoke, Va.

Buckets. (Coal.)
Rawson & Morrison Mfg. Co., Cambridge, Boston, Mass.

Buckets. (Excavators.)
Hayward Co., New York, N. Y.

Stuebner, G. L., Iron Works, Long Island City, N. Y.

Buckets. (Ore.)
Link-Belt Engineering Co., Nicetown, Phila., Pa.
Stuebner, G. L., Iron Works, Long Island City, N. Y.

Building Blocks (Hollow Concrete)
Palmer, Harmon S., Hollow Concrete B. B. Co., Washington, D. C.

Building Supplies.
Armstrong Mfg. Co., Richmond, Va.
Bartlett Mfg. Co., Philadelphia, Pa.
Bird, W. M., & Co., Charleston, S. C.
Kriegshaber, V. H., Atlanta, Ga.
Maryland Lime & Cement Co., Baltimore, Md.
Warner, Charles, Co., Wilmington, Del.

Brass. (Graphite and Bronze.)
Graphite Lubricating Co., Bound Brook, N. J.

Cableways. (Wire Rope.)
Broderick & Bascom Rope Co., St. Louis, Mo.
Contractors, Plant Mfg. Co., Buffalo, N. Y.
Flory, S. Mfg. Co., Bangor, Pa.
Lidgerwood Mfg. Co., New York, N. Y.
Rawson & Morrison Mfg. Co., Cambridge, Boston, Mass.
Roebeling's Sons Co., John A., Trenton, N. J.
Tranton Iron Co., Trenton, N. J.

Calcutta Chloride.
Carbondale Chemical Co., Carbondale, Pa.

Cannamakers' Machinery.
Niagara Machine & Tool Works, Buffalo, N. Y.

Canning Machinery.
Sprague Canning Machinery Co., Chicago, Ill.

Canning Supplies.
Sprague Canning Mch. Co., Chicago, Ill.

Capitans. (HAND AND STEAM, ELECTRIC, HORSEPOWER.)
American Ship Windlass Co., Providence, R. I.

Card Clothing.
American Supply Co., Providence, R. I.
Bigelow, W. H., Charlotte, N. C.

Carriage and Wagon Hardware.
Wilcox Mfg. Co., D., Mechanicsburg, Pa.

THE Burt Exhaust Head

Is the Best Exhaust Head on the Market today.



It is guaranteed to give you satisfaction, or we will refund your money without comment.

The BURT EXHAUST HEAD put on the end of your exhaust pipe will prevent oil and wet steam from escaping.

No more rotting roofs and sloppy, disfigured walls if you use the BURT EXHAUST HEAD.

"The Burt Exhaust Head is giving us perfect satisfaction. Roof is dry as a bone."

MISSISSIPPI LUMBER CO.
QUITMAN, MISS.

THE BURT MFG. CO.

Largest Mfrs. of Oil Filters in the World,

Akron, Ohio, U. S. A.

Supplied also by Engine Builders, Dealers and Power Contractors.



ACHESON GRAPHITE

Manufactured in the Electric Furnace. Write us for full information regarding the use of this material in high grade protective coatings, lubricating compounds, pipe joint compounds, as foundry facings, for electrotyping purposes, etc.

INTERNATIONAL ACHESON GRAPHITE CO., Niagara Falls, N. Y., U. S. A.

KINNEAR'S

STEEL ROLLING DOORS SHUTTERS AND PARTITIONS

ARE DURABLE AND EASILY OPERATED

FOR BUILDINGS OF EVERY CLASS

WRITE FOR CATALOG 'L'

THE KINNEAR MFG. CO., COLUMBUS, OHIO.

BOSTON, 85 WATER ST. CHICAGO, 112 CLARK ST. PHILADELPHIA, 101 CHESTNUT ST.



Nonpareil Anti-Friction Metal.

Best Anti-Friction Metal for all machinery bearings. For high speed and heavy crushing weight it has no equal.

THEO. HIERTZ METAL CO., Sole Manufacturers,

10th and Poepping Sts., ST. LOUIS, MO.

Manufactures all grades Babbitt Metals, Solder, Bar Tin, Bar Lead, Lead Car Seals, Pig Tin, Pig Lead, Antimony, Copper, Spelter, etc.

SAND-BRICKS.

Every "Sandbank or Sandhill" is the best place for a "Brickyard." No need of clay, dryers or kilns to produce a strong, sound, perfect "Face Brick" and at a lower cost than common clay bricks are usually produced, out of sand and a small percentage of lime, in ten hours, in any weather, winter or summer.

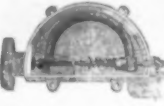
114-118 LIBERTY ST., NEW YORK. H. HUENNEKES & CO. 114-118 LIBERTY ST., NEW YORK.

are erecting and equipping factories of any capacity in any locality of the United States, Canada, Mexico, Cuba and South America under their patented process known as

"HUENNEKES SYSTEM"

Factories in operation in different sections of the United States and in other countries. Any size, shape or color of bricks produced under this system and every brick perfect. Besides factories in operation there are now being erected other factories under our system from Montreal, Canada, throughout the United States to Monterey, Mexico. FACTS ARE BETTER PROOFS THAN TESTIMONIALS, and seeing one of our factories in operation is to believe that our system is a thorough success and a big money maker. Write for illustrated pamphlet and particulars.

MANY STARS
but only one
Jupiter.
Many steam traps,
but only one



Heintz Steam Trap.
It pays its way in coal-saving in six months. It makes your plant do more and better work, and it lasts a lifetime. Proof before pay.
Send for booklet "1."

WILLIAM S. HAINES CO.
136 South Fourth Street, Philadelphia.

Imhauser's Watchman's Time Detectors.
Cannot fail.
Write for Catalogue.



Made with 12 or 24 different keys. Contain all the modern improvements. Warranted in every way. Cannot be tampered with without detection.
MANUFACTURED BY
E. IMHAUSER & CO., 206 Broadway, New York.



PROTECTION
The Waggoner Watchman Clock
Safeguards Your Property Against Fire or disturbances or indolence of watch men. Shipped on 30 days' FREE trial.
Reduces Insurance
Interesting Booklet Free. It is called "Common Sense For Business Men." We make Sanitary Chemical Fire Pails.
The Waggoner Watchman Clock Co.
GRAND RAPIDS, MICHIGAN

THE OHIO FIRE BRICK CO.
OAK HILL, OHIO.
Manufacturers of
High-Grade Fire Brick
for Blast Furnaces.
Ask us for delivered prices.

The Harrington & King Perforating Co.

PERFORATED METALS
OF EVERY DESCRIPTION, FOR ALL PURPOSES
AND FOR SCREENS OF ALL KINDS
•CHICAGO•U.S.A.

234 NORTH UNION ST. CHICAGO. 114 LIBERTY ST. NEW YORK.

MAIN OFFICE & WORKS CHICAGO.

SUPPLIED \$1 MONTHLY


Hawkins' Series
are the most complete library of practical books published for Engineers, Firemen, Electricians and Machinists.
Treating on Steam Engineering in all its branches, including questions and answers; Electrical Engineering and Self-Help Mechanical Drawing.
Complete catalog giving special terms and prices sent free upon request.

for Engineers.
THEO. AUDEL & CO.
Educational Books
63 Fifth Avenue New York City

FACTORY TIME CHECKS.
They are being used more and more. Write for our pamphlet, "Time Checks and Their Use." We also make
MERCHANDISE CHECKS.
AMERICAN RAILWAY SUPPLY CO.
Address Dept. J. 24 Park Place, New York.

The Powhatan Clay Mfg. Co.,
RICHMOND, VA.
White, Buff, Speckled, Gray, Red and Iron Spot Bricks.
In All Sizes and Shapes. FIRE BRICK.

Watchman's Time Detectors,
LATEST IMPROVED.
With Safety Lock Attachments.
Portable and Electric.
For any number of stations. Give an exact record of the night watchman's rounds. Insurance rates reduced.
Write for circulars and full particulars to
B. NANZ, 127 Duane St., N. Y.



THE ROBINSON OILS
"they lubricate more, and outlast other oils."
High-Grade,
Cylinder, Engine, Spindle,
Dynamo Oils.
Oils for all types of Machinery.
GREASES.
WM. C. ROBINSON & SON CO.
217 South St., BALTIMORE, MD.

Conveying, Elevating and Power Transmitting Machinery
A COMPLETE LINE OF THE BEST.

Caldwell Helicoid Conveyor!



CALDWELLS HELICOID
The only perfect spiral conveyor with continuous flight—no laps or rivets.
Seamless Steel Elevator Buckets, Elevator Boots, Rope Transmission Machinery, Sprocket Wheels, Link Belting, Shafting, Belting, Hangers, Pulleys, Gears, Carpullers, Automatic Power Grain Shovels, Wood Split Pulleys, Wire Cloth, Perforated Metal.
Complete Equipments for handling materials of all kinds.

H. W. CALDWELL & SON COMPANY,
Our New Catalogue No. 26 (440 Pages, Cloth Bound), will be Sent Upon Request.
EASTERN SALES AND ENGINEERING OFFICE, 410-95 Liberty St., New York, N. Y. SOUTH-EASTERN SALES AND ENGINEERING OFFICE, 411 Prudential Bldg., Atlanta, Ga.
SOUTH-WESTERN SALES AND ENGINEERING OFFICE, 202 Trust Bldg., Dallas, Tex.

Western Avenue, 17th to 18th Streets, CHICAGO, ILL.

Class

Car. (Austin Mfg. Clark & H. Continental Jackson M. Kilbourne Koppel, Art. Link-Belt Males Co., T. Peacock Iron Sanford-Da Savannah Steele, J. C. Stuebner G. Union Iron Womham-M. Equipm. Car Bu. Fay, J. A. Car Co. Chester Ste. Latrobe Ste. Safety Car Car Li. Safety Car Car Me. Herts, Th. Car W. Koppel, Ar. Macleary, Peacock Iron Sanford-Da. Union Iron Eastern Standard C. Castin. Alabama I. Lunkenheide. Palapco M. Phosphor R. Richmond Ryan, J. J. Van Dusen Castin. Pittsburg R. Ryan, J. J. Castin. Alabama I. American I. Chattanooga Hammick Easton Fou. Glamorgan Kriegshab. Leonard I. McLanahan Maryland Rose-Meeh. Sanford-D. Thompson Valley Iron Westbrook Wood, B. E. Castin. Chester Ste. Rose-Meeh. Castin. Chester Ste. Diamond Northmann Cellin. Penn. Meis. Ceme. American Bird, W. A. Carolina E. Camber, I. French, St. General St. Gilbert, C. Hartranft Kelley Isl. Kriegshab. Maryland Maryland Mobile Co. Ridgemon Southeastern St. Louis Warner C. Ceme. Bradley P. Kent Mill Osborn E. Smith, F. Ceme. Osborn E. Chair. Speidel, J. Case Mfg. Chillicothe Empire C. Federal M. Greenwald Indiana C. Jeffrey M. H. J. Fou. Chair Allison, V. Ceme. Electric S. Polacheck Char. Obermayr Char. Mathieu, C. Cheek American Chem. Catlett, C. Froehling Pratt Lat. Chion Carbonda Chuc. Morse Tw. Whittier C. Clock Imhauser Nanz, B. Waggoner Coal. Alabama Big Brun. Castner, J. Davis Co. Jewett, B. Main Jel. Mobile Co. Moore, E. River, W. Coal. Aultman Bartlett, Hayward Jeffrey M. Link-Bel. Rawson C. Stuebner Coal. Barrett. Richana Coke Alabama Big Brun. Davis Co. Moore, E. Comp. Con. Green

Classified Index of Articles Advertised

FOR ALPHABETICAL
INDEX See Page 32

Cars. (Mine, Dump and Logging.)
Austin Mfg. Co., Chicago, Ill.
Clark & Hines, Baltimore, Md.
Continental Car & Equipment Co., New York, N. Y.
Jackson Manufacturing Co., Harrisburg, Pa.
Kilbourne & Jacobs, Mfg. Co., Columbus, O.
Koppel, Arthur, New York City.
Link-Belt Engineering Co., Philadelphia, Pa.
Malco Co., The Cincinnati, O.
Pascoot Iron Works, Selma, Ala.
Sanford-Day Iron Works, Knoxville, Tenn.
Savannah Loco. Wks. & Supply Co., Savannah, Ga.
Steele, J. C., & Sons, Statesville, N. C.
Stuebner G. L., Iron Works, Long Island City, N. Y.
Union Iron Works, Selma, Ala.
Woolham-Magor Engine Works, New York, N. Y.

Cars. (Passenger and Freight.) [See Railroad
Equipment and Supplies.]

Car Building Machinery.
Fay, J. A., & Egan Co., Cincinnati, O.

Car Couplers and Knuckles.
Chester Steel Castings Co., Philadelphia, Pa.
Latrobe Steel & Coupler Co., Philadelphia, Pa.
Safety Car Heating & Lighting Co., New York, N. Y.

Car Lighting and Heating.
Safety Car Heating & Lighting Co., New York, N. Y.

Car Seats. (Leads.)
Hertz, Theo., Metal Co., St. Louis, Mo.

Car Wheels, Axles and Trucks.
Koppel, Arthur, New York, N. Y.
Maclear, J. H., & Co., Suffolk, Va.
Pascoot Iron Works, Selma, Ala.
Sanford-Day Iron Works, Knoxville, Tenn.
Union Iron Works Co., Selma, Ala.

Casters and Caster Wheels.
Standard Caster & Wheel Co., New York, N. Y.

Castings. (Brass and Bronze.)
Alabama Iron Works, Mobile, Ala.
Lankenheimer Co., Cincinnati, O.
Patapasco Machine & Supply Co., Baltimore, Md.
Phosphor Bronze Sintering Co., Ltd., Phila., Pa.
Richmond Pattern Works, Richmond, Va.
Ryan, J. J., & Co., Chicago, Ill.
Van Dusen, E. W., Co., Cincinnati, O.

Castings. (Aluminum.)
Pittsburg Reduction Co., Washington, D. C.
Ryan, J. J., & Co., Chicago, Ill.

Castings. (Iron.)
Alabama Iron Works, Mobile, Ala.
American Ship Windlass Co., Providence, R. I.
Chattanooga Roofing & Fdry. Co., Chattanooga, Tenn.
Dimmick Pipe Co., Birmingham, Ala.
Easton Foundry & Machine Co., Easton, Pa.
Glamorgan Pipe & Foundry Co., Lynchburg, Va.
Kriegshafer, V. H., Atlanta, Ga.
Lombard Iron Works & Supply Co., Augusta, Ga.
McLanahan-Stone Machine Co., Hollidaysburg, Pa.
Maryland Fdry. & Mch. Co., Baltimore, Md.
Richmond Pattern Works, Richmond, Va.
Ross-Meehan Fdry. Co., Chattanooga, Tenn.
Sanford-Day Iron Works, Knoxville, Tenn.
Tompkins, D. A., Co., Charlotte, N. C.
Valley Iron Works, Williamsport, Pa.
Westbrooks, J. B., Fdry. & Mch. Co., Danville, Va.
Wood, S. D., & Co., Philadelphia, Pa.

Castings. (Malleable Iron and Steel.)
Chester Steel Castings Co., Chester, Pa.
Ross-Meehan Fdry. Co., Chattanooga, Tenn.

Castings. (Steel.)
Chester Steel Castings Co., Chester, Pa.
Diamond Drill & Machine Co., Birdsboro, Pa.
Nortmann-Duffel Fdry. Co., Milwaukee, Wis.

Ceilings. (Metal.)
Penn Metal Ceiling & Roofing Co., Phila., Pa.

Cement.
American Cement Co., Philadelphia, Pa.
Bird, W. M., & Co., Charleston, S. C.
Carolina Port. Cement Co., Charleston, S. C.
Cumber. Hyd. Cement & Mfg. Co., Cumberland, Md.
French, Samuel H., & Co., Philadelphia, Pa.
General Supply & Construction Co., New York, N. Y.
Gibbert, C. M., & Co., Savannah, Ga.
Hartman Cement Co., Wm. G., Philadelphia, Pa.
Island Lime & Transport Co., Cleveland, O.
Kriegshafer, V. H., Atlanta, Ga.
Maryland Cement Co., Baltimore, Md.
Maryland Lime & Cement Co., Baltimore, Md.
Mobile Coal Co., Mobile, Ala.
Ridgmont Cement Mfg. Co., Ironville, Va.
Southeastern Lime & C. Co., Charleston, S. C.
St. Louis Portland Cement Co., St. Louis, Mo.
Warner Co., Chas., Wilmington, Del.

Cement Machinery.
Bradley Pulverizer Co., Boston, Mass.
Kent Mill Co., New York, N. Y.
Osborn Engineering Co., Cleveland, O.
Smith, F. L., & Co., New York, N. Y.

Cement Plant Designers.
Osborn Engineering Co., Cleveland, O.

Chain Hoists.
Spindel, J. G., Reading, Pa.

Chains.
Case Mfg. Co., Columbus, O.
Chillicothe-Ryan Chain Co., Allegheny, Pa.
Empire Chain Co., Pittsburgh, Pa.
Federal Mfg. Co., Diamond Chain Fcty., Indianapolis, Ind.
Greswald Co., J. & E., Cincinnati, O.
Indiana Chain Works, Jeffersonville, Ind.
Jeffrey Mfg. Co., The Columbus, O.
N. J. Foundry & Machine Co., New York, N. Y.

Chairs. (Invalids.)
Allison, J. C., Indianapolis, Ind.

Chandeliers.
Electric Supply Co., Savannah, Ga.

Charcoal. (Filtering.)
Obermayer Co., S. Cincinnati, O.

Charcoal. (Fuel.)
Mathien, J. A., Georgetown, S. C.

Checks. (Factory, Time and Merchandise.)
American Railway Supply Co., New York, N. Y.

Chemists.
Caldwell, Chas., Staunton, Va.
Froehling & Robertson, Richmond, Va.
Pratt Laboratory, N. P., Atlanta, Ga.

Chloride of Calcium.
Carbondale Chemical Co., Carbondale, Pa.

Chucks.
More Twist Drill & Machine Co., New Bedford, Mass.
Skinner Chuck Co., New Britain, Conn.
Whitton Machine Co., D. E., New London, Conn.

Clocks. (Watchman's and Town.)
Imhauser & Co., E. New York, N. Y.
Kass, B., & Co., New York, N. Y.
Waggoner Watchman Clock Co., Grand Rapids, Mich.

Coal.
Alabama Con. Coal & Iron Co., Birmingham, Ala.
Big Brushy Coal & Coke Co., Harriman, Tenn.
Caster, Curran & Bullitt, Philadelphia, Pa.
Davis Coal & Coke Co., Philadelphia, Pa.
Jewett, Bigelow & Brooks, Detroit, Mich.
Main Jellico Mt. Coal Co., Kenosha, Ky.
Mobile Coal Co., Mobile, Ala.
Moore, Edgar M., & Co., Pittsburgh, Pa.
River, W. E., Coal Co., Baltimore, Md.

Coal-Bending Machinery.
Aultman Co., Canton, O.
Bartlett, C. O., & Snow Co., Cleveland, O.
Hayward Co., New York, N. Y.
Jeffrey Mfg. Co., Columbus, O.
Link-Belt Engineering Co., Philadelphia, Pa.
Rawson & Morrison Mfg. Co., Cambridge, Boston, Mass.
Stuebner, G. L., Iron Works, Long Island City, N. Y.

Coal Tar Products.
Barrett Mfg. Co., Philadelphia, Pa.
Buchanan-Foster Co., Philadelphia, Pa.

Coke.
Alabama Con. Coal & Iron Co., Birmingham, Ala.
Big Brushy Coal & Coke Co., Harriman, Tenn.
Davis Coal & Coke Co., Philadelphia, Pa.
Moore, Edgar M., & Co., Pittsburgh, Pa.

Compressed Air Locomotives. (See Locomotive Builders.)

Concentrating Plants.
Gronow Co., Geo. V., New York, N. Y.

Concrete Block Machinery.
Palmer, H. S., Concrete Building Block Co., Wash., D. C.

Concrete Engineers.
Frink & Hazen, Baltimore, Md.
Gibbith, Frank B., Boston, Mass.
Osborn Engineering Co., Cleveland, O.
Ransome & Smith Co., New York, N. Y.

Concrete Mixers.
Contractors' Supply & Equipment Co., Chicago, Ill.
Drake Standard Machine Works, Chicago, Ill.
Ransome Concrete Mch. Co., New York, N. Y.

Concrete Steel Construction.
Frink & Hazen, Baltimore, Md.
Ransome & Smith Co., New York, N. Y.
Upton, W. B., Co., Inc., Washington, D. C.

Condensers.
Alberger Condenser Co., New York, N. Y.
McClave, Hamilton & Co., New York, N. Y.
Price, S. M., Machinery Co., Norfolk, Va.
Stilwell-Bierce & Smith-Valle Co., Dayton, O.

Contractors. (Paving, etc.)
Robinson Contracting Co., Geo. A., Mobile, Ala.

Contractors and Builders.
Gibbith, Frank B., Boston, Mass.
Speir, W. E., Washington, D. C.

Contractors' Machinery and Supplies. (See Hoisting Machinery.)
Aultman Co., Canton, O.
Austin Mfg. Co., Chicago, Ill.
Contractors' Plant Mfg. Co., Buffalo, N. Y.
Flory, S. Mfg. Co., Bangor, Pa.
Malco Co., The Cincinnati, O.
Marion Steam Shovel Co., Marion, O.
Meyer, J. W., & Co., Philadelphia, Pa.
Municipal Engineering & Contracting Co., Chicago, Ill.
N. J. Foundry & Machine Co., New York, N. Y.
Pascoot Iron Works, Selma, Ala.
Sanford-Day Iron Works, Knoxville, Tenn.

Conveying Machinery.
Aultman Co., Canton, O.
Bartlett, C. O., & Snow Co., Cleveland, O.
Caldwell, H. W., & Son Co., Chicago, Ill.
Flory, S. Mfg. Co., Bangor, Pa.
Hayward Co., New York, N. Y.
Jeffrey Mfg. Co., The Columbus, O.
Lidgerwood Mfg. Co., New York, N. Y.
Link-Belt Engineering Co., Nictown, Phila., Pa.
McLanahan-Stone Machine Co., Hollidaysburg, Pa.
N. J. Foundry & Machine Co., New York, N. Y.
Rawson & Morrison Mfg. Co., Cambridge, Boston, Mass.
Robins Conveying Belt Co., New York, N. Y.
Wolf Co., Chambersburg, Pa.

Cooling Towers.
Alberger Condenser Co., New York, N. Y.
Stocker, George J., St. Louis, Mo.

Copper.
Hertz, Theo., Metal Co., St. Louis, Mo.
Ryan, J. J., & Co., Chicago, Ill.

Coppersmiths.
Badger, E. B., & Sons Co., Boston, Mass.
McMillan Bros. Co., Mobile, Ala.

Cordage.
American Mfg. Co., New York, N. Y.
Bailey, J. T., & Co., Philadelphia, Pa.
Columbian Cordage Co., Auburn, N. Y.

Cornices. (Metal.)
Chattanooga Roofing & Fdry. Co., Chattanooga, Tenn.
Wulff, W. G., & Co., Louisville, Ky.

Corn-Mill Machinery.
Allis-Chalmers Co., Chicago, Ill.
Brown, A. & P., Co., New York, N. Y.
Nordyke & Marmon Co., Indianapolis, Ind.
Foss Mfg. Co., Springfield, O.
Munson Bros. Co., Ulica, N. Y.
Sprout, Waldron & Co., Muncy, Pa.
Starr, B. F., & Co., Baltimore, Md.
Wolf Co., Chambersburg, Pa.

Corrugated Iron.
Scaife, W. B., & Sons Co., Pittsburgh, Pa.

Cotton Oil.
American Cotton Oil Co., New York, N. Y.
Cotton Oil & Fibre Co., Philadelphia, Pa.
Southern Cotton Oil Co., New York, N. Y.

Cotton Yarns. (Consolidation Merchants.)
Blythe, Richard A., Philadelphia, Pa.
Buckingham, Paulson & Co., Philadelphia, Pa.

Cotton-Gin Machinery.
Carver Cotton Gin Co., E. Bridgewater, Mass.
Gibbes, W. H., & Co., Columbia, S. C.
Tompkins, D. A., Co., Charlotte, N. C.
Valk & Murdoch Iron Works, Charleston, S. C.
Van Winkle Gin & Machine Works, E. Atlanta, Ga.

Cotton-Mill Machinery and Supplies.
American Supply Co., Providence, R. I.
Atherton Machine Co., A. T., Pawtucket, R. I.
Bigelow, W. H., Charlotte, N. C.
Conoco Iron Foundry & Machine Co., Cohoes, N. Y.
Cotton States Beltting & Supply Co., Atlanta, Ga.
Draper Co., Hopedale, Mass.
Fairmount Machine Co., Philadelphia, Pa.
Kilburn, Lincoln & Co., Fall River, Mass.
Lowell Machine Shop, Boston, Mass.
Mason Machine Works, Taunton, Mass.
Robbins, O. A., Charlotte, N. C.
Ruth Automatic Knitting Machine Co., York, Pa.
Sherwood Hobbs & Mfg. Co., Greensboro, N. C.
Tompkins, D. A., Co., Charlotte, N. C.
Washburn, A. H., Charlotte, N. C.
Whitinsville Spin. Ring Co., Whitinsville, Mass.

Cottonseed-Oil Machinery.
American, Chicago, Ill.
Buckeye Iron & Brass Works, Dayton, Ohio.
Bushnell Press Co., G. H., Thompsonville, Conn.
Cardwell Machine Co., Richmond, Va.
Carver Cotton Gin Co., E. Bridgewater, Mass.
Foss Mfg. Co., Springfield, O.
Sprout, Waldron & Co., Muncy, Pa.
Stilwell-Bierce & Smith-Valle Co., Dayton, Ohio.
Tompkins, D. A., Co., Charlotte, N. C.
Van Winkle Gin & Machine Works, E. Atlanta, Ga.

Cottonseed Mch. (Hullers, Separators, etc.)
Carver Cotton Gin Co., East Bridgewater, Mass.

Cottonseed Products.
American Cotton Oil Co., New York, N. Y.
Cotton Oil & Fibre Co., Philadelphia, Pa.
Southern Cotton Oil Co., New York, N. Y.

Covering. (Pipe and Boiler.)
Carey, Philip, Mfg. Co., Lockland, O.
Southern Pipe Covering Co., Richmond, Va.

Coverers. (Rollers and Cleaners.)
American Supply Co., Providence, R. I.

Cranes. (Traveling, Hand, Power, Hydraulic.)
Case Manufacturing Co., The Columbus, O.
Hayward Co., New York, N. Y.
Lane Mfg. Co., Montpelier, Vt.
Niles-Bement-Pond Co., New York, N. Y.
Pawling & Harnischfeger, Milwaukee, Wis.

Cranks.
Chester Steel Castings Co., Philadelphia, Pa.

Crayons.
Lowell Crayon Co., Lowell, Mass.

Crossing Works.
International Crossing & Cons. Co., Galveston, Tex.
West Pascagoula Crossed Wks., W. Pascagoula, Miss.

Cross Arm Saws and Rounders.
Chattanooga Machine Co., Chattanooga, Tenn.

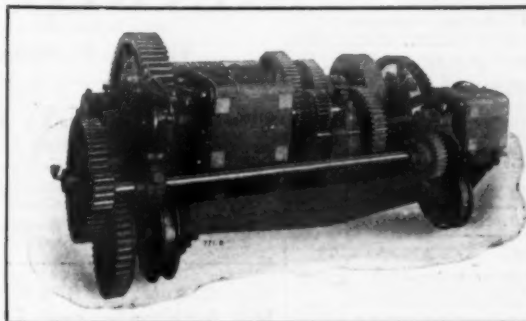
Cross Arms and Pins.
Allegheny Pin & Bracket Co., Covington, Va.
Houston & Liggett, Lewisburg, Tenn.

Cross Ties.
International Crossing & Cons. Co., Galveston, Tex.
Wilkins, Van S., Lumber Co., Mobile, Ala.

Crushing and Pulverizing Mch.
Austin Mfg. Co., Chicago, Ill.
Bartlett, C. O., & Snow Co., Cleveland, O.
Bradley Pulverizer Co., Boston, Mass.
Cresson Co., Geo. V., New York, N. Y.
Kent Mill Co., New York, N. Y.
McLanahan-Stone Machine Co., Hollidaysburg, Pa.
Maydon Bros. Impact Pulv. Co., Chicago, Ill.
Simpson, J. S., & G. F., Brooklyn, N. Y.
Smith, F. L., & Co., New York, N. Y.

Northern Steel Crane Motors

Built to stand the racket, made for crane service;
simple, sturdy, right mechanically, right electrically.



Write for

**Crane
Motor
Bulletin
No. 632.**

Northern Electrical Mfg. Co.

Madison, Wis., U. S. A.

Engineers—Manufacturers.

— ESTABLISHED 1874. —

To make bright, smooth, clean castings, use

702 Pure Ceylon Plumbago

Ask your neighbor about it.

The S. Obermayer Co.

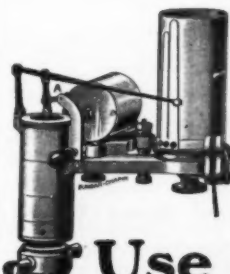
CINCINNATI.

CHICAGO.

PITTSBURG.

Manufacturers

"Everything you need in your Foundry."



You get a correct card

Every Time

if you

**Use The Crosby
INDICATOR.**

We have a booklet written for you—write for it.

Crosby Steam Gage & Valve Company.

OFFICE AND WORKS, BOSTON, MASS.

93-97 Oliver St., BOSTON, MASS.
21-23 Lake Street, CHICAGO.

78 John Street, NEW YORK.
147 Queen Victoria St., LONDON.

ARCHITECTS, CHEMISTS, CONTRACTORS, ENGINEERS, Etc.

FRANK P. MILBURN,
ARCHITECT
COLUMBIA, S. C.

Mills, Factories, Warehouses of Steel-Concrete Construction.
Plans prepared and estimates furnished by
W. B. UPTON CO., (Inc.)
Constructing Engineers,
Washington Loan & Trust Bldg., Washington, D. C.

W. B. SMITH WHALEY & CO.
Mill Engineers and Architects.
OFFICES—1328 Main Street, Columbia, S. C.
and 1012 Tremont Building, Boston, Mass.

O. H. SHEFFIELD & CO.,
Civil Engineers
and Architects,
318 Austell Bldg., ATLANTA, GA.
Railways, Water Powers, Municipal, Public Works, Bridges and Buildings.

WHEELER & RUNGE
ARCHITECTS,
Charlotte, N. C.

McMichael & Hunter,
ARCHITECTS,
CHARLOTTE, N. C.

PAUL GASSER,
ARCHITECT.
Office Jackson Block,
TAMPA, FLORIDA.

E. C. WILEY, M. E.
M. AM. SOC. M. E.
Lynchburg, Va.
Plans prepared for the installation of lighting, heating and power plants.
Machine Design and Working Drawings a Specialty.

C. A. M. PRARAY & CO.
Mill Architects and Engineers,
PROVIDENCE, R. I.

BARR & ELAM, Electrical Contractors.
Electric and Gas Supplies, Electric Bells, Burglar Alarms, &c.
GREENSBORO, NORTH CAROLINA.

C. R. MAKEPEACE & CO.
Architects and Mill Engineers.
PROVIDENCE, R. I. Plans, Specifications and Estimates furnished for Cotton and Woolen Mills.

P. A. MCCARTHY, C. E.
Civil and Consulting Engineer.
Late Ch. Eng. Eastern Texas R. R. M., Am. Ry. Eng. & M. of Way Ass'n.
Examinations and Reports; Power Plants, Bridges and Structures, Municipal Improvements, Water Supply, Sewerage and Irrigation, Electric Light Plants, Steam and Electric Railway Location and Construction.
Telephone 174. **DECATUR, TEXAS.**

JOHN W. HAYS,
M. AM. SOC. C. E.
Civil Engineer,
WATER POWERS, WATER SUPPLY, SEWERAGE.
No. 3 S. Adams St., Petersburg, Va.

W. H. HARVEY,
Engineer and Contractor,
Plans and Specifications for Complete Plants.
Electric, Hydraulic and Steam Installations.
Results Guaranteed.
Suite 380 Randolph Bldg., MEMPHIS, TENN.

COLLIER & BROWN,
Electrical & Mechanical Engineers.
Engineering, Designing and Supervising of Steam, Electric and Hydraulic Plants.
Cotton Mill Construction a Specialty.
917-18-19 Empire Bldg., ATLANTA, GA.

THE HUTTON ENGINEERING CO.
LEXINGTON, VA.
Consulting and Contracting
Electrical and Mechanical Engineers.
Central Stations Electric Railways, Steam and Power Plants.
Established 1891. Cable Address, "Catlett."

CHARLES CATLETT,
Chemist and Geologist,
Formerly of the U. S. Geol. Survey Lab.
Examination and Report on Developed and Undeveloped Properties.
Staunton, Va.
Long Distance Telephone Connection.

The Geo. A. Robinson Contracting Company, Inc.,
General Contractors and Builders.
Mobile, Ala.

N. P. PRATT LABORATORY,
Fitten Building, ATLANTA, GA.
Assays and analyses of all natural and artificial products. Chemical and mining engineering.

FROEHLING & ROBERTSON,
Successors to Dr. HENRY FROEHLING,
Analytical and Consulting Chemists.
Chemical and Mining Engineers.
17 South 12th St., RICHMOND, VA.
Analyses and assays of ores of every kind, and of all artificial products. Water analysis, mineral, sanitary and manufacturing, a specialty. Estimates promptly furnished. Geological and chemical investigation of mineral properties of the South.

John E. Ramsay & Co.
ARCHITECTS.
Bell Block. SALISBURY, N. C.

Jos. McWilliams & Co.
Engineers and Contractors.
Louisville, Ky.

Complete Installations for Factories, Institutions, Hotels and Large Buildings.

Steam Power Plants, Electric Street Railway, Power, Lighting and Factory Transmission Plants, Heating and Ventilating Apparatus, Ice-Making and Refrigerating Plants, Machinery and Supplies.

W. E. SPEIR,
Contractor and Builder,
Brick, Stone, Wood, Iron and Steel Construction.
Office, the Bliss Bldg., 35, 37 & 39 B St., N. W.
WASHINGTON, D. C.

FRED GORDON SHAW,
ARCHITECT
AUGUSTA and COLUMBUS, GA. Special Attention to Heavy Constructions.

Myers, Finney & Morrison,
Associated Engineers.
CIVIL, ELECTRICAL, MECHANICAL.
E. T. D. Myers, Jr., John H. Finney, Hugh S. Morrison,
Mem. Am. Soc. C. E. As. Mb. A.I.E.E. Jun. Mb. A.S.M.E.
WASHINGTON, D. C. and RICHMOND, VA.
Bond Bldg. 1107½ E. Main St.

FOR THE
RESIDENCE,
PUBLIC BUILDINGS
AND FACTORIES.
Electric Rwy., Power and Lighting Plants, Industrial Plants, Factory Economics, Modernizing, Arbitration, BLUE PRINTS, all kinds.

Engineering Company of America,
(INCORPORATED.)
74 Broadway, New York.
ENGINEERS
In Civil, Mechanical, Electrical, Hydraulic, Forestry, Metallurgical and Mining Departments,
Plans, Specifications and Supervision of Installations of plants of all kinds.

Examination, Reports and Recommendations on existing properties, with a view to reducing cost of maintenance and production.
Reports giving the technical and commercial possibilities of Enterprises, Power Plants, Mines, Smelters, Railways.

Branch Offices.
HENRY E. KNOX, JR., Southern Manager,
Artesian well and Sub-surface water supply,
Piedmont Building, Charlotte, North Carolina.

MEMBER AMERICAN SOCIETY MECHANICAL ENGINEERS. MEMBER AMERICAN INSTITUTE ELECTRICAL ENGINEERS.

JAMES B. SCOTT,
CONSULTING ENGINEER.
607-8 WEST END TRUST BLDG. 808-9 MARYLAND TRUST BLDG. 1109 COMMERCIAL CABLE BLDG.
PHILADELPHIA. BALTIMORE. NEW YORK.

REPORTS—Examinations and expert advice on the earning capacity, construction, operation and reorganization of public service properties.
SURVEYS—Projected railways and general practice.
PLANS AND SPECIFICATIONS—Complete electric railways, electric lighting systems, steam and hydraulic power plants, etc.
SUPERINTENDENCE—During construction. Supervision of operating departments.

STEEL FRAME MILL BUILDINGS,
STEEL and IRON TANKS and VATS
OF EVERY DESCRIPTION

Scaife's Germ-Proof Water Filters,
to 10,000 gallons capacity per hour.
WM. B. SCAIFE & SONS CO.
(Founded 1802.)
PITTSBURG, PA.

TURNTABLES

Blast Furnace Construction.
Bessemer and Open Hearth Steel Works.
ENGINEERING
WALTER KENNEDY,
Engineer,
Bljuu Bldg., 611 Penn Ave.
Pittsburg, Pa.
Long Distance Phone, 3174.

ARCHITECTS
CHAS. W. CARLTON and CO.,
621 Austell Building,
ATLANTA, GA.

STRUCTURAL STEEL
FURNISHED and ERECTED
Anywhere in the World
Only American firm having steel fabricated in Europe.
Can make quick deliveries and quote very interesting prices.
GENERAL SUPPLY and CONSTRUCTION COMPANY,
Engineers and Contractors.
8-10 Bridge St., NEW YORK.

Bridges—Buildings—Structural Steel
VIRGINIA BRIDGE & IRON COMPANY
ROANOKE, VIRGINIA

Class

Starvation
Walker &
Crush
Brown Co
Foss Mfg
Munson B
Wolf Co.
Crush
Laird &
Cupol
Obermay
Petroleum
Cutter
Moshann
Shimer, S
Smith, H.
Bado
Hester B
Design
Alpha Ph
Baltimore
Desh
Cushing C
Dearborn
Himmel.
Dies
Leder, Cl
Niagara
Dippe
Taylor In
Kinner A
Dredg
Hardie-T
Hayward
Male Co
Marion S
Thew Aut
Drill
Drill
Sullivan
Drill
Ingersol
McKleron
Rand Dr
Sullivan
Drill
Barnes Co
Marine Tw
Drill
Ballew-L
Barnes Co
Barr, H.
Bickford
Price, S.
Walke, H
Dry-E
Baltimore
Newport
Dry-E
American
Andrew
Ballew-L
Bartlett, C
Jeffrey M
Buggles-C
Starvean
Dry-E
American
Starvean
Union Iron
Dana
Spidel, J
Dredg
Allington
Cincinnati
Dixie Mfg
Dyein
Fairmount
Dynam
Alexander
Commercial
Crocker-V
Ewing-M
Florida E
Electrical
General E
Guarantee
Jennison,
Kentucky
Northern
Piedmont
Bldgway
Standard
Triumph
Wesco Su
Westingh
Educ
Georgia S
University
Eject
Ohio Inje
Eject
Alexander
Barr & El
Electrical
Electric S
Ewing-M
Harvey, V
MacAfee,
McWilliam
Barthene
Scott, Jan
Standard
Tompkins
Upton, W
Wesco Su
Westingh
Elect
Alexander
Commercial
Crocker-V
Electrical
Electric S
Ewing-M
General E
N. J. Four
Northern
Piedmont
Bldgway
Standard
Tompkins
Triumph
Upton, W
Wesco Su
Westingh
Elect
Waver, V
Elect
Alexander
Electrical
Ewing-M
General E
Northern
Standard
Triumph
Westingh
Wesco Su
Elect
Alexander
Electric S

Classified Index of Articles Advertised

For ALPHABETICAL INDEX See Page 32

Sturtevant Mill Co., Boston, Mass.
Walker & Elliott, Wilmington, Del.
Crushers. (Corn and Cob.)
Brown Co. A. & F., New York, N. Y.
Foss Mfg. Co., The, Springfield, O.
Munson Bros. Co., Utica, N. Y.
Wolf Co., The, Chambersburg, Pa.
Crusher Rings.
Larose Steel Co., Philadelphia, Pa.
Capola Furnaces.
Obermayer, S. Co., Cincinnati, O.
Petroleum Iron Works Co., Washington, Pa.
Cutterheads. (Woodworking.)
Moshannon Mfg. Co., Philadelphia, Pa.
Shaver, Samuel J., & Sons, Milton, Pa.
Smith, H. B., Machine Co., Smithville, N. J.
Pado Heads.
Ester Bros., Rochester, N. Y.
Designers and Illustrators.
Alpha Photo-Engraving Co., Baltimore, Md.
Baltimore-Maryland Engraving Co., Baltimore, Md.
Boats.
Cushing Co., The, Baltimore, Md.
Dearborn Boat Co., Birmingham, Ala.
Himmel, M. L., & Son, Baltimore, Md.
Dies for Sheet-Metal Workers.
Lester, Chas., & Co., Brooklyn, N. Y.
Niagara Machine & Tool Works, Buffalo, N. Y.
Dipper Teeth, Lips, etc.
Taylor Iron & Steel Co., High Bridge, N. J.
Boers. (Steel Rolling.)
Kinross Mfg. Co., Columbus, O.
Dredges and Excavators.
Hardie-Tynes Mfg. Co., Birmingham, Ala.
Hayward Co., New York, N. Y.
Males Co., Cincinnati, O.
Marion Bean Shovel Co., Marion, O.
The Automatic Shovel Co., Lorain, O.
Drills. (Pneumatic.) (See Drills, Rock & Mining.)
Drills. (Prospecting.)
Sullivan Machinery Co., Chicago, Ill.
Drills. (Rock and Mining.)
Ingersoll-Sergeant Drill Co., New York, N. Y.
McKernan Drill Co., New York, N. Y.
Rand Drill Co., New York, N. Y.
Sullivan Machinery Co., Chicago, Ill.
Drills. (Twist.)
Barnes Co., W. F. & John, Rockford, Ill.
New Twist Drill & Machine Co., New Bedford, Mass.
Drill Presses.
Bailey-Lebby Co., Charleston, S. C.
Barnes Co., W. F. & John, Rockford, Ill.
Barr, H. G., Worcester, Mass.
Bickford Drill & Tool Co., The, Cincinnati, O.
Price, S. M., Machinery Co., Norfolk, Va.
Walke, Henry Co., Norfolk, Va.
Dry-Docks.
Baltimore Shipbuilding & Dry Dock Co., Balto., Md.
Newport News Shipbuilding & D. D. Co., Newport News, Va.
Drying Machinery.
American Blower Co., Detroit, Mich.
Andrews & Johnson Co., Chicago, Ill.
Bailey-Lebby Co., The, Charleston, S. C.
Bartlett, C. O., & Snow Co., Cleveland, O.
Jeffrey Mfg. Co., The, Columbus, O.
Bagley-Cole Engineering Co., New York, N. Y.
Sturtevant Co., B. F., Boston, Mass.
Dry-Kilns.
American Blower Co., Detroit, Mich.
Sturtevant Co., B. F., Boston, Mass.
Union Iron Works Co., Selma, Ala.
Dumbwaiters.
Spindel, J. G., Reading, Pa.
Dust-Collecting System.
Allington & Curtis Mfg. Co., Saginaw, K. S. Mich.
Cincinnati Exhaust & Blow Pipe Co., Cincinnati, O.
Dixie Mfg. Co., Baltimore, Md.
Dyeing Machinery.
Fairmount Machine Co., Philadelphia, Pa.
Dynamometers and Motors.
Alexander, Jr., Co., S. B., Charlotte, N. C.
Commercial Electric Co., Indianapolis, Ind.
Crocker-Wheeler Co., Ampere, N. J.
Ewing-Merkle Electric Co., St. Louis, Mo.
Florida Electric Co., Jacksonville, Fla.
General Electric Co., Schenectady, N. Y.
Guarantee Electric Co., Chicago, Ill.
Jannson, Chas. F., Buffalo, N. Y.
Kentucky Electrical Co., Owensboro, Ky.
Northern Electrical Mfg. Co., Madison, Wis.
Piedmont Electric Co., Asheville, N. C.
Ridgway Dynamo & Engine Co., Ridgway, Pa.
Standard Electric Co., Norfolk, Va.
Triumph Electric Co., Cincinnati, O.
Wesco Supply Co., St. Louis, Mo.
Westinghouse Elec. & Mfg. Co., Pittsburgh, Pa.
Educational Institutions.
Georgia School of Technology, Atlanta, Ga.
University School for Boys, Baltimore, Md.
Ejectors.
Ohio Injector Co., Wadsworth, O.
Electric Contractors.
Alexander, Jr., Co., S. B., Charlotte, N. C.
Barr & Elam, Greensboro, N. C.
Electrical Material Co., Baltimore, Md.
Electric Supply Co., Savannah, Ga.
Ewing-Merkle Electric Co., St. Louis, Mo.
Harvey, W. H., Memphis, Tenn.
MacAfee, John Blair, Philadelphia, Pa.
McWilliams, Joe, & Co., Louisville, Ky.
Northern Elec. Mfg. Co., Madison, Wis.
Scott, James B., Baltimore, Md.
Standard Electric Co., Norfolk, Va.
Tompkins, D. A., Co., Charlotte, N. C.
Upton, W. B., Co., Washington, D. C.
Wesco Supply Co., St. Louis, Mo.
Electrical Instruments.
Electrical Material Co., Baltimore, Md.
Ewing-Merkle Electric Co., St. Louis, Mo.
Northern Electric Mfg. Co., Madison, Wis.
Piedmont Electric Co., Asheville, N. C.
Standard Electric Co., Norfolk, Va.
Wesco Supply Co., St. Louis, Mo.
Westinghouse Electric & Mfg. Co., Pittsburgh, Pa.
Electric Mchys. (Generators, Motors, etc.)
Alexander, Jr., Co., S. B., Charlotte, N. C.
Commercial Electric Co., Indianapolis, Ind.
Crocker-Wheeler Co., Ampere, N. J.
Electrical Material Co., Baltimore, Md.
Electric Supply Co., Savannah, Ga.
Ewing-Merkle Electric Co., St. Louis, Mo.
General Electric Co., Schenectady, N. Y.
N. J. Foundry & Machine Co., New York, N. Y.
Northern Electrical Mfg. Co., Madison, Wis.
Piedmont Electric Co., Asheville, N. C.
Ridgway Dynamo & Engine Co., Ridgway, Pa.
Standard Electric Co., Norfolk, Va.
Tompkins, D. A., Co., Charlotte, N. C.
Triumph Electric Co., Cincinnati, O.
Upton, W. B., Co., Washington, D. C.
Wesco Supply Co., St. Louis, Mo.
Westinghouse Elec. & Mfg. Co., Pittsburgh, Pa.
Electric Power.
Weaver, W. T., Power Co., Asheville, N. C.
Electric Railway Equipment.
Alexander, Jr., Co., S. B., Charlotte, N. C.
Electrical Material Co., Baltimore, Md.
Ewing-Merkle Electric Co., St. Louis, Mo.
General Electric Co., Schenectady, N. Y.
Northern Electrical Mfg. Co., Madison, Wis.
Standard Electric Co., Norfolk, Va.
Triumph Electric Co., Cincinnati, O.
Westinghouse Elec. & Mfg. Co., Pittsburgh, Pa.
Wesco Supply Co., St. Louis, Mo.
Electrical Repairs.
Alexander, Jr., Co., S. B., Charlotte, N. C.
Electric Supply Co., Savannah, Ga.

Ewing-Merkle Electric Co., St. Louis, Mo.
Guarantee Electric Co., Savannah, Ga.
Kentucky Electrical Co., Owensboro, Ky.
Standard Electric Co., Norfolk, Va.
Wesco Supply Co., St. Louis, Mo.
Electrical Supplies.
Alexander, Jr., Co., S. B., Charlotte, N. C.
Barr & Elam, Greensboro, N. C.
Electrical Material Co., Baltimore, Md.
Electric Supply Co., Savannah, Ga.
Ewing-Merkle Electric Co., St. Louis, Mo.
Florida Electric Co., Jacksonville, Fla.
General Electric Co., Schenectady, N. Y.
Guarantee Electric Co., Chicago, Ill.
Kentucky Electrical Co., Owensboro, Ky.
Northern Electrical Mfg. Co., Madison, Wis.
Piedmont Electric Co., Asheville, N. C.
Standard Electric Co., Norfolk, Va.
Triumph Electric Co., Cincinnati, O.
Wesco Supply Co., St. Louis, Mo.
Westinghouse Elec. & Mfg. Co., Pittsburgh, Pa.
Electric Locomotives. (See Locomo. Bldrs.)
Electric Trucks.
Baldwin Locomotive Works, Philadelphia, Pa.
Electrotypers.
American Type Setters Co., Baltimore, Md.
Spencer & Hall, Baltimore, Md.
Elevators.
American Machine Co., Louisville, Ky.
Bartlett, C. O., & Snow Co., Cleveland, O.
Bates' James Sons, Baltimore, Md.
Coburn Iron Foundry & Machine Co., Cohoes, N. Y.
Fairmount Machine Co., Philadelphia, Pa.
Faint Le Roy & Co., Baltimore, Md.
Florida Electric Co., Jacksonville, Fla.
Haven Elevator Co., Cincinnati, O.
Kinkade & Liggett, Columbus, O.
Link-Belt Engineering Co., Philadelphia, Pa.
Louisville Elevator Co., Louisville, Ky.
Maryland Foundry and Machine Co., Baltimore, Md.
Morse, Williams & Co., Philadelphia, Pa.
Otis Elevator Co., New York, N. Y.
Parkhurst Bros. & Co., Indianapolis, Ind.
Park Mfg. Co., Charlotte, N. C.
Plunger Elevator Co., Worcester, Mass.
Reedy, J. W., Elevator Mfg. Co., Chicago, Ill.
Spindel, J. G., Reading, Pa.
Westbrooks, J. B., Fdry. & Mch. Co., Danville, Va.
Elevator Buckets.
Caldwell, H. W., & Son Co., Chicago, Ill.
Greenwald Co., I. & E., Cincinnati, O.
Jeffrey Mfg. Co., Columbus, O.
Link-Belt Engineering Co., Philadelphia, Pa.
Taylor Iron & Steel Co., High Bridge, N. J.
Elevator Enclosures and Cabs.
Bolles, J. E. Iron & Wire Works, Detroit, Mich.
Buffalo Wire Works Co., Buffalo, N. Y.
Dufur & Co., Baltimore, Md.
Radlow-Saylor Wire Co., The, St. Louis, Mo.
Meyers Mfg. Co., The, The, Hamilton, O.
Elevator Rope. (See Wire Rope.)
Emery.
Carborundum Co., The, Niagara Falls, N. Y.
Emery Wheels. (See Grinding and Polishing Machinery.)
Employment Bureaus.
Engineering Agency, Chicago, Ill.
Engineers. (Electric, Civil, Consulting, Contracting, Mechanical and Mining, etc.)
Alber & Byrne, Birmingham, Ala.
Collier & Brown, Atlanta, Ga.
Consolidated Air Lift Co., Washington, D. C.
Crocker-Wheeler Co., Ampere, N. J.
Dyer, D. H., & Sons, Fall River, Mass.
Engineering Co. of America, New York, N. Y.
Florida Electric Co., Jacksonville, Fla.
Frink & Hazen, Baltimore, Md.
Force, John P., Columbus, Ohio.
Gilbreth, Frank B., Boston, Mass.
Harvey, W. H., Memphis, Tenn.
Hays, John W., Petersburg, Va.
Hutton Engineering Co., Lexington, Va.
Kennedy, Walter, Pittsburgh, Pa.
Ludwig & Co., Atlanta, Ga.
MacAfee, John Blair, Philadelphia, Pa.
McCarthy, F. A., Decatur, Tex.
McWilliams, Joe, & Co., Louisville, Ky.
Municipal Engineering & Contracting Co., Chicago, Ill.
Myers, Finney & Morrison, Richmond, Va.
Northern Elec. Mfg. Co., Madison, Wis.
Osborn Engineering Co., Cleveland, O.
Passic Steel Co., Paterson, N. J.
Pearson, E. P., Parsons's W. Va.
Pratt Laboratory, N. P., Atlanta, Ga.
Railways & Light Co. of America, Balto., Md.
Riesdon-Alcott Turbine Co., Mount Holly, N. J.
Robinson Contracting Co., Geo. A., Mobile, Ala.
Sarle, O. Perry, Providence, R. I.
Scott, Jas. B., Baltimore, Md.
Sheffield, O. H., & Co., Atlanta, Ga.
Smith & Co., P. L., New York, N. Y.
Standard Electric Co., Norfolk, Va.
Tompkins, D. A., Co., Charlotte, N. C.
Trafford, E. W., Richmond, Va.
Upton, W. B., Co., Washington, D. C.
Virginia Bridge & Iron Co., Roanoke, Va.
Wiley, E. C., Lynchburg, Va.
Westinghouse, Church, Kerr & Co., Pittsburgh, Pa.
Engines.
Alexander, Jr., Co., S. B., Charlotte, N. C.
Allis-Chalmers Co., Chicago, Ill.
American Engine Co., Bound Brook, N. J.
Atlas Engine Works, Indianapolis, Ind.
Ball Engine Co., The, Erie, Pa.
Ball & Wood Co., New York, N. Y.
Baltimore Engine Co., Baltimore, Md.
Bates Machine Co., Joliet, Ill.
Brown Corliss Eng. Co., Corliss, Wis.
Brownell & Co., The, Dayton, O.
Cameron & Barkley Co., Charleston, S. C.
Chicago House Wrecking Co., Chicago, Ill.
Conner, C. & G., Co., Mt. Vernon, O.
Duke Engine Co., Grand Haven, Mich.
Erie Pump & Engine Co., Erie, Pa.
Farquhar Co., A. B., Ltd., York, Pa.
Fishkill Landing Machine Co., Fishkill, N. Y.
Flory, B., Mfg. Co., Bangor, Pa.
Frick Co., Waynesboro, Pa.
Gibbs, W. H., & Co., Columbia, S. C.
Greenwald Co., I. & E., Cincinnati, O.
Hardie-Tynes Mfg. Co., Birmingham, Ala.
Harrison Fdry. & Machine Wks., Harrisburg, Pa.
Hartfelder-Garbutt Co., Savannah, Ga.
Hill, Wm. E., & Co., Kalamazoo, Mich.
Hooven, Owens & Rentscher Co., Hamilton, O.
Houston, Stanwood & Gamble Co., Cincinnati, O.
Lefel, James, & Co., Springfield, O.
Lidgerwood Fdry. & Machine Wks., New York, N. Y.
Lombard Iron Works & Supply Co., Augusta, Ga.
Price, S. M., Machinery Co., Norfolk, Va.
McClave, Hamilton & Co., New York, N. Y.
Murray Iron Works Co., Burlington, Iowa.
Neckelburg Iron Works, Charlotte, N. C.
Pennsylvania Iron Works, Philadelphia, Pa.
Phoenix Iron Works Co., Meadville, Pa.
Ridgway Dynamo & Engine Co., Ridgway, Pa.
Robbins, O. A., Charlotte, N. C.
Savannah Locomotive & Car Works, Savannah, Ga.
Schofield, J. S., Sons Co., Macon, Ga.
Shepherd Engineering Co., Franklin, Pa.
Smith-Courtney Co., Richmond, Va.
Southern Eng. & Boiler Works, Jackson, Tenn.
Southark Foundry & Machine Co., Philadelphia, Pa.
St. Louis Iron & Machine Works, St. Louis, Mo.
Strait, H. N., Mfg. Co., Kansas City, Mo.
Sturtevant Co., B. F., Boston, Mass.
Tod, Wm., Co., Youngstown, O.
Tompkins, D. A., Co., Charlotte, N. C.
Union Iron Works Co., Selma, Ala.
Valk & Murdoch Iron Works, Charleston, S. C.

FUEL BURNING APPLIANCES.

ROCKWELL ENGINEERING CO.,

36 Cortlandt Street,

NEW YORK.

OIL FURNACES

FOR EVERY

PURPOSE.

Concrete Steel Construction,

Ransome System.

FRINK & HAZEN,

CONSULTING AND CONTRACTING ENGINEERS,

711 Union Trust Building, Baltimore, Md.

Buildings—STEEL—Bridges.

GEO. W. KNOX, M. A. I. E. E.

JAS. Z. GEORGE, A. M. A. I. E. E.; J. M. A. S. M. E.

KNOX, GEORGE & CO.

Consulting Engineers.

Design Build and Operate Electric Railway,
Lighting and Power Transmissi n Systems;
Gas Plants, Pumping Plants for Water Supply,
Drainage and Irrigating Systems, etc.

OFFICES

Fisher Building, CHICAGO.

Tulane-Newcomb Building, NEW ORLEANS

THE OSBORN ENGINEERING CO.

Osborn Bldg., Cleveland, O.

Consulting, Civil, Mechanical,

Electrical and Mining Engineers.

BRIDGES—Steel, Concrete, Stone—for Highways, Electric Railways, Railroads.

MANUFACTURING PLANTS—of All Kinds, Machine Shops, Foundries, Factories, Power

Plants, Warehouses.

CEMENT PLANTS—Expert Examination of Property, Analyses and Tests of Materials, Sample

Burnings, Plans, Specifications and Superintendence, New Plants ready for operation.

BITUMINOUS COAL PROPERTIES—Prospecting, Surveys, Reports, Plans, Specifications,

New Plants.

INSPECTION. Structural Steel at Mills and Shops. CEMENT TESTING.

CHATTANOOGA ROOFING & FOUNDRY CO.

Formerly CHATTANOOGA STEEL ROOFING CO.

Manufacturers of all kinds of

ROOFING AND CASTINGS,

Store Fronts, Columns, Lintels, Sills,

GALVANIZED IRON WORK,

Awnings, Skylights and Cornice.

PATENT METAL SHINGLES, Tin and

Galvanized.

All Styles Steel and Tin Roofing,

Drip Pans, Stove Pipe, Elbows, etc.

CHATTANOOGA, TENNESSEE.

A New Small Motor.

Form L.

Outputs 1-4 to 3 H. P.

Now Ready for Shipment.

A strongly constructed hand-
somerly finished machine.Crocker-Wheeler Company, } Ampere,
N. J.

E. W. TRAFFORD,

Consulting Electrical Engineer,

(Member Am. Inst. Elect. Engrs.)

27 Chamber of Commerce,

RICHMOND, VA.

Design and Supervision of Lighting.

Power and Railway Developments.

W. H. JENKS,

Electrical Contractor,

AND DEALER IN

ELECTRICAL SUPPLIES OF EVERY
DESCRIPTION.

617 E. Main Street, Richmond, Va.

LUDWIG & CO.

Consulting Engineers.

Specialty:

POWER PLANTS,

Steam, Electric, Hydraulic.

Condensers and

Cooling Towers.

513 Empire Bldg.

ATLANTA, GA.

O. PERRY SARLE,

Civil Engineer,

146 Westminster St., Providence, R. I.

Development of Water Powers. Designs for
Power Stations. Masonry Dams. Valuation of
Water Powers. Water Supply. Sewerage.

JOHN P. FORCE,

Sanitary and Hydraulic Engineer.

Water Works, Sewerage and Sewage
Disposal. Surveys, Estimates, Plans,
Specifications and Reports. Construction
Superintended.

41-42 Dispatch-Bulter Block, COLUMBUS, O.

JOHN BLAIR MacAFEE

The building and equipment of steam and electric
railways, power plants and lighting systems.
Preliminary engineering with estimates.
Reports on properties in operation.

Harrison Bldg., PHILADELPHIA.

Old Dominion Portland Cement.

W. G. HARTRANFT CEMENT CO.

MANUFACTURED BY
VIRGINIA PORTLAND CEMENT CO.
CRAIGSVILLE, VA.

SOLE SELLING AGENT.

Real Estate Trust Building,
PHILADELPHIA, PA.



Carolina Portland Cement Co

CHARLESTON, S. C. BIRMINGHAM, ALA.

Sole Selling Agents for North and South Carolina, Florida and Georgia. Lime, Rosendale Cement, Louisville Cement, Etc.
Full stocks of Portland Cement, Rosendale Cement and Plaster at Norfolk, Wilmington, Charleston and Savannah.

Maryland Lime & Cement Co.

217-219 Bowly's Whf. BALTIMORE, MD.

DISTRIBUTORS:—Lehigh Portland Cement—Rosendale Cement—Savage, Union, Somerset Fire Brick—Lime—Vitrified Salt-Glazed Sewer Pipe—Cal. Plaster—Limoid—Roofing Felts—Flue Linings—Chimney Tops, etc.

CONTRACTORS



For the installation of
**WATER WORKS or
SEWER SYSTEMS,**
ALSO
**GAS AND OIL PIPE
LINES.**

Will cooperate with
RESPONSIBLE CONTRACTORS
in any part of
the country wishing to
use our machinery on
profit-sharing basis.

Machines Leased to Responsible Contractors.
MUNICIPAL ENGINEERING & CONTRACTING CO.

Offices, 1311 Manhattan Building, Chicago, Ill.

LEHIGH Portland Cement



High Tensile Strength, Finely Ground,
Light and Uniform in Color.

Southern and Western Distributors:

**THE KELLEY ISLAND LIME
& TRANSPORT CO.**

CLEVELAND, OHIO.

CUMBERLAND HYDRAULIC CEMENT

Equal to many

PORTLAND BRANDS.

The "No plus ultra" of Natural Hydraulic Cements.

Quadruple
Grinding.



Initial Crushers,
Ball and
Tube Mills.

Recommended by Engineers, Specified
by Architects, Accepted Standard for
**EXCELLENCE,
DURABILITY,
STRENGTH.**

The Cumberland Hyd. Cement & Mfg. Co.

P. O. Box 264.

CUMBERLAND, MD.



ROYAL, MUNICIPAL, AMERICAN PORTLANDS.

Warner's Hydraulic, Warner's Improved Hydraulic, Lime, "Limoid" Plaster, Sewer Pipe, etc.

CHARLES WARNER COMPANY,
New York, Wilmington, Philadelphia.

THE FINEST CEMENTS



Lehigh
Brand

Dexter
Brand



**SOUTHEASTERN
LIME & CEMENT
CO.**

Charleston, S. C.

Southern Distributors

CEMENTS

William M. Bird & Co.,
CHARLESTON, S. C.

Manufacturers' Agents for

American, Rosendale and Portland
Cements and Importers of Best
Brands of Foreign.

Full Stocks of

Oils, Paints and Builders' Supplies.

Rosendale Cement.



**CHEAPEST
and most
RELIABLE
for
SOUTHERN
Work.**

50 Years' Record.
500 Bbls. Daily.

RIDGEMONT CEMENT MFG. CO.
Ironville, Va.

RUGGLES-COLES

DRYERS

FOR

Phosphates, Slag, Coal,
Marl, Clay, Etc.

**RUGGLES-COLES
ENGINEERING CO.**

CHICAGO.

NEW YORK.

V. H. KRIEGSHABER,

Manufacturer and dealer in
BUILDING SUPPLIES.

Lime, cement, fire brick, pressed brick, sewer pipe,
marble tile, wrought and cast iron work, terra cotta.
Office, No. 6 Austell Bldg., Atlanta, Ga.
Carload and mixed car shipments a specialty.

PORTLAND CEMENT.

C. M. GILBERT & CO., SAVANNAH, GA.

MARYLAND CEMENT CO.

MANUFACTURERS OF

Highest Grade Portland Cement.

OFFICE:
Builders' Exchange, Baltimore, Md.

WORKS:
Sparrows Point, Maryland.

Ransome Concrete Mixers

designed by specialists for their
own use, combine with the highest
efficiency an economy greater
than is attained by any other
machine.

Ransome Concrete Machinery Co.

Concrete Machinery and Appliances,
Twisted Steel, Etc.

11 Broadway, New York.

OUR AGENTS CARRY STOCK

H. CHANNON CO., Chicago.

NORMAN B. LIVERMORE CO., San Francisco.

JAMES COOPER, Montreal, Can.

GEORGE COOPER, Pittsburg, Pa.

The Greatest Concrete Mixer Yet Made.

Also Mortar and
Asphalt Mixers.

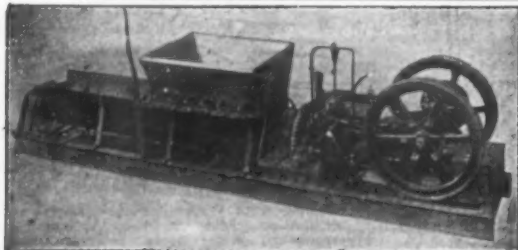
Write for our new Catalogue M.

DRAKE STANDARD MACHINE WORKS,

Factory,
7-9-11-13 Garden Street,
Chicago

Numbers of Patents.

35,664	698,182
672,934	698,910
675,035	699,667
675,036	699,668
675,037	701,312



This is only one of 30 or more styles of machines that we make for
different kinds of concrete work. 10 patents
allowed, others pending.

RANSOME'S Concrete Steel Construction

For FACTORIES, WAREHOUSES, ETC. Detailed information
promptly furnished.

RANSOME & SMITH CO.,

11 Broadway New York.

CONSULTING CONCRETE ENGINEERS.

Class

Valley Iron
Viller Mfg.
Vogt, Hen
Walker, H
Westingho
Westingho
Engin
Blakeslee
Brown-Coc
Capital Ga
Columbus
Gibbs, W
Otte Gas
Pennsylv
Price, S. M
Westingho
Westingho
Engin
Niagara H
Engin
Alpha Ph
Baltimore
Middleton
Excell
American
Gibbs, W
Exha
Burt Mfg.
Expan
M. J. Roun
Fann
Electrical
General El
Westingho
Fann
Feed-
Rater Mac
Gibbs, W
Green Fue
Greenwald
Keller, Be
McAdoo T
National I
Petroleum
Scaife, W
Stillwell-B
Webster &
Felling
Bader, A
Fencl
Bolles Iron
Buffalo W
Dufur & C
Eureka St
Ludlow-S
New Jerse
Fertiliz
Files
Barnett Co
Miller Oil
Nicholson
Filler
Oberray
Wisconsin
Filter
Scaife, W
Filter
Burt Mfg.
Capitol C
Filter
Stillwell-B
Fire-
Carolina I
Georgia V
Kriegshab
Maryland
Obermaye
Ohio Fire
Pomona T
Portland
Seven', I
Fire
Badger Fi
General F
Fire
Bolles Iron
Flexi
Moran Fi
Floor
Adams, J
Forman, J
Witte Co.
Wilkins,
Flour
Supp
Allis-Cha
Bartlett, C
Caldwell,
DeLoach
Gibbs, W
Hardyke
Sprout, W
Starr, B. B
Wolf Co.
Fine
Gem Mfg.
Foot
Newman
Burtevan
Forge
Burtevan
Forge
Alabama
Wilcox, I
Fann
Obermay
Frick
Brown, A
Minster N
Fuel
Green Fu
Fuel
Petroleum
Rockwell
Furn
Kennedy
Means &
Furn
Rockwell
Gage
Amer. St
Crosby S
Galv
American
Bourne-
Gas
Brown-C
Gas
Pittsburg
Gas
Wood, B
Gas
Saunders
Simmons
Gask
Boson B
E. J. Car
Parsons
Voorhes
Gear
Whiton
Gear
Brown, A
Caldwell
Case Mfg
Chester
Fairmou
Jeffrey H
Greenwa

Classified Index of Articles Advertised

FOR ALPHABETICAL INDEX See Page 32

Valley Iron Works, Williamsport, Pa.
 Viller Mfg. Co., Milwaukee, Wis.
 Vogt, Henry, Machine Co., Louisville, Ky.
 Waite, Henry, Co., Norfolk, Va.
 Westinghouse, Church, Kerr & Co., Pittsburgh, Pa.
 Westinghouse Machine Co., Pittsburgh, Pa.
Waxes. (Gas, Gasoline and Kerosene.)
 Wallace Mfg. Co., The, Birmingham, Ala.
 Brown-Cochran Co., Lorain, O.
 Capital Gas Engine Co., Indianapolis, Ind.
 Columbus Machine Co., Columbus, O.
 Gibbs, W. H., & Co., Columbia, S. C.
 Otto Gas Engine Works, Philadelphia, Pa.
 Pennsylvania Iron Works, Philadelphia, Pa.
 Price, S. M., Machinery Co., Norfolk, Va.
 Westinghouse, Church, Kerr & Co., Pittsburgh, Pa.
 Westinghouse Machine Co., Pittsburgh, Pa.
Engines. (Hydraulic Pumping.)
 Niagara Hydraulic Engine Co., Chester, Pa.
Engravers.
 Alpha Photo-Engraving Co., Baltimore, Md.
 Baltimore-Maryland Engraving Co., Baltimore, Md.
 Middleton, J. W., & Co., Chicago, Ill.
Excelsior Machines.
 American Excelsior & Machine Co., Baltimore, Md.
 Gibbs, W. H., & Co., Columbia, S. C.
Exhaust Heads.
 Bari Mfg. Co., Akron, O.
Expansion Belts.
 N. J. Foundry & Machine Co., New York, N. Y.
Fans. (Electric.)
 Electrical Material Co., Baltimore, Md.
 General Electric Co., Schenectady, N. Y.
 Westinghouse Electric & Mfg. Co., Pittsburgh, Pa.
Fans. (Ventilating.) (See Blowers, Exhaust Fans.)
Feed-Water Heaters and Purifiers.
 Bates Machine Co., Joliet, Ill.
 Gibbs, W. H., & Co., Columbia, S. C.
 Green Fuel Economizer Co., Matamoras, N. Y.
 Greenwald Co., I. & E., Cincinnati, O.
 Kelley, Benj. F., & Son, New York, N. Y.
 McAdoo Thomas, Philadelphia, Pa.
 National Pipe Bending Co., New Haven, Conn.
 Petroleum Iron Works Co., Washington, Pa.
 Scaife, Wm. B., & Sons, Co., Pittsburgh, Pa.
 Sillwell-Bierce & Smith-Valle Co., Dayton, O.
 Webster & Co., Warren, Camden, N. J.
Felling. (Hair.)
 Bader, Adamson & Co., Philadelphia, Pa.
Fencing. (Iron, Steel, Wire.)
 Bolles Iron & Wire Works, J. E., Detroit, Mich.
 Buffalo Wire Works Co., Buffalo, N. Y.
 Dufur & Co., Baltimore, Md.
 Eureka Supply Co., Chattanooga, Tenn.
 Ludlow-Saylor Wire Co., St. Louis, Mo.
 New Jersey Wire Cloth Co., Trenton, N. J.
Fertilizer Machinery. (See Phosphate Mch.)
Files.
 Barnett Co., G. & H., Philadelphia, Pa.
 Miller Oil & Supply Co., Indianapolis, Ind.
 Nicholson File Co., Providence, R. I.
Filler. (Iron.)
 Obermayer, S. Co., Cincinnati, O.
 Wisconsin Graphite Co., Pittsburgh, Pa.
Filters. (Water.)
 Scaife, Wm. B., & Sons, Co., Pittsburgh, Pa.
Filters. (Oil.)
 Burt Mfg. Co., The, Akron, O.
 Capital Co., Philadelphia, Pa.
Filter Presses.
 Sillwell-Bierce & Smith-Valle Co., Dayton, O.
Fire-Brick.
 Carolina Portland Cement Co., Killian, S. C.
 Georgia Vitrified Brick & Clay Co., Augusta, Ga.
 Kriegerhiser, V. H., Atlanta, Ga.
 Maryland Lime & Cement Co., Balto., Md.
 Obermayer Co., S., Cincinnati, O.
 Ohio Fire-Brick Co., Oak Hill, O.
 Pomona Terra Cotta Co., Pomona, N. C.
 Powhatan Clay Mfg. Co., Richmond, Va.
 Stevens, H., Sons Co., Macon, Ga.
Fire Extinguishers.
 Badger Fire Extinguisher Co., Boston, Mass.
 General Fire Extinguisher Co., Providence, R. I.
Fire Escapes.
 Bolles Iron & Wire Works, J. E., Detroit, Mich.
Flexible Joints.
 Moran Flexible Joint Co., Louisville, Ky.
Flooring. (Hardwood.)
 Adams, J. M., Baltimore, Md.
 Farman, Thomas, Co., Detroit, Mich.
 Wilcox, The T. Co., Chicago, Ill.
 Wilkins, Van S., Lumber Co., Mobile, Ala.
Flour and Grist Mill Machinery and Supplies.
 Allis-Chalmers Co., Chicago, Ill.
 Bartlett, C. O., & Snow Co., Cleveland, O.
 Caldwell, H. W., & Son Co., Chicago, Ill.
 DeLoach Mill Mfg. Co., Atlanta, Ga.
 Gibbs, W. H., & Co., Columbia, S. C.
 Nordyke & Harmon Co., Indianapolis, Ind.
 Bryant, Waldron, & Co., Muncy, Pa.
 Harr, B. F., & Co., Baltimore, Md.
 Wolf Co., Chambersburg, Pa.
Flue Scrapers. (For Boilers.)
 Gem Mfg. Co., Pittsburgh, Pa.
Foot Valves.
 Newman Mfg. Co., New York, N. Y.
Forges.
 Sturtevant Co., B. F., Boston, Mass.
Forgings.
 Alabama Iron Works, Mobile, Ala.
 Wilcox, D., Mfg. Co., Mechanicsburg, Pa.
Foundry Equipment and Supplies.
 Obermayer Co., S., Cincinnati, O.
Friction Clutches.
 Brown, A. F., New York, N. Y.
 Minster Machine Co., Minster, O.
Fuel Economizer.
 Green Fuel Economizer Co., Matamoras, N. Y.
Fuel Oil Equipment.
 Petroleum Iron Works Co., Washington, Pa.
 Rockwell Engineering Co., New York, N. Y.
Furnace Builders.
 Kennedy, Walter, Pittsburgh, Pa.
 Means & Fulton Iron Works, Birmingham, Ala.
Furnaces. (Metallurgical.)
 Rockwell Engineering Co., New York, N. Y.
Gages (Recording) and Counters.
 Amer. Steam Gauge & Valve Mfg. Co., Boston, Mass.
 Crosby Steam Gauge & Valve Co., Boston, Mass.
Galvanized Sheets.
 American Sheet Steel Co., New York, N. Y.
 Bessemer-Fuller Co., Cleveland, O.
Gas Compressors.
 Brown-Cochran Co., Lorain, O.
Gas Meters.
 Pittsburgh Meter Co., E. Pittsburgh, Pa.
Gas Producers.
 Wood, B. D., & Co., Philadelphia, Pa.
Gas and Steam Fitters' Tools.
 Hazzard Sons, D., Yorkers, N. Y.
 Himmens, John, Co., New York City.
Gaskets.
 Boston Belting Co., Boston, Mass.
 N. J. Car Spring & Rubber Co., Jersey City, N. J.
 Perfection Rubber Mfg. Co., New York, N. Y.
 Voorhees Mfg. Co., Jersey City, N. J.
Gear Cutting Machines.
 Whiton Machine Co., D. E., New London, Conn.
Gearing.
 Brown, A. F., Co., New York, N. Y.
 Caldwell, H. W., & Son Co., Chicago, Ill.
 Case Mfg. Co., Columbus, O.
 Chester Steel Casting Co., Philadelphia, Pa.
 Fairmount Machine Co., Philadelphia, Pa.
 Jeffrey Mfg. Co., The, Columbus, O.
 Greenwald Co., I. & E., Cincinnati, O.

Link-Belt Engineering Co., Philadelphia, Pa.
 Nordyke & Harmon Co., Indianapolis, Ind.
 Taylor Iron & Steel Co., High Bridge, N. J.
 Tompkins, D. A., Co., Charlotte, N. C.
 Woods, T. B., Sons, Chambersburg, Pa.
Geologists.
 Callett, Chas., Staunton, Va.
 Froehling & Robertson, Richmond, Va.
Governor. (Water Wheel.)
 Replique Governor Works, Akron, Ohio.
Graphite.
 Detroit Graphite Mfg. Co., Detroit, Mich.
 Dixon Crucible Co., Jos. Jersey City, N. J.
 International Acheson Graphite Co., Niagara Falls, N. Y.
 Obermayer, S. Co., Cincinnati, O.
 Wisconsin Graphite Co., Pittsburgh, Pa.
Grates and Grate Bars.
 McElvaine-Brooks Co., Scranton, Pa.
 Miller Oil & Supply Co., Indianapolis, Ind.
 Sanford-Day Iron Works, Knoxville, Tenn.
Grain Elevator Supplies.
 Caldwell, H. W., & Son Co., Chicago, Ill.
 Jeffrey Mfg. Co., Columbus, O.
 Link-Belt Engineering Co., Nicotown, (Phila.) Pa.
Greases. (Lubricating.)
 Cook's Sons, Adam, New York, N. Y.
 Robinson, Wm. C., & Son, Baltimore, Md.
Grinding and Polishing Machinery.
 Abrasive Material Co., The, Philadelphia, Pa.
 Carborundum Co., The, Niagara Falls, N. Y.
 Monarch Emery & Corundum Wheel Co., Camden, N. J.
 Norton Emery Wheel Co., Worcester, Mass.
 Vittrid Wheel Co., Westfield, Mass.
Groovers.
 Huther Bros., Rochester, N. Y.
 Smith, H. B., Machine Co., Smithville, N. J.
Gunpowder.
 Peters Cartridge Co., Cincinnati, O.
Hammers. (Steam, Pneumatic.)
 Rand Drill Co., New York, N. Y.
 Robinson, J. M., Mfg. Co., Cincinnati, O.
 Savannah Locomotive & Car Works, Savannah, Ga.
Handle Mch. (See Woodworking Mch.)
 Fay, J. A., & Egan Co., Cincinnati, O.
 Root, B. M., York, Pa.
Hardware Specialties.
 Wrightsville Hardware Co., Wrightsville, Pa.
Hay Tools.
 Myers & Bro., F. E., Ashland, O.
Heating Apparatus.
 American Blower Co., Detroit, Mich.
 Andrews & Johnson Co., Chicago, Ill.
 Dixie Mfg. Co., Baltimore, Md.
 Downman-Doxier Mfg. Co., Atlanta, Ga.
 Monitor Steam Generator Mfg. Co., Baltimore, Md.
 Peck-Hammond Co., The, Cincinnati, O.
 Sturtevant Co., B. F., Boston, Mass.
 Webster, Warren Co., Camden, N. J.
Holding Machinery.
 American Ship Windlass Co., Providence, R. I.
 Evans Machine Co., Jan F., Havana, O.
 Contractors' Plant Mfg. Co., Buffalo, N. Y.
 Duke Engine Co., Grand Haven, Mich.
 Flory, S. Mfg. Co., Bangor, Pa.
 Hardie-Tynes Mfg. Co., Birmingham, Ala.
 Hayward Co., New York, N. Y.
 Jeffrey Mfg. Co., The, Columbus, O.
 Link-Belt Engineering Co., Philadelphia, Pa.
 Lidgerwood Mfg. Co., New York, N. Y.
 Males Co., The, Cincinnati, O.
 Price, S. M., Machinery Co., Norfolk, Va.
 Moyer, J. W., & Co., Philadelphia, Pa.
 Rawson, J. M., Co., Cambridge, Boston, Mass.
 Sprague Canning Machinery Co., Chicago, Ill.
 Sullivan Machinery Co., Chicago, Ill.
Holists. (Electric.)
 Pawling & Harnischfeger, Milwaukee, Wis.
Holists. (Pneumatic, Motor.)
 Rand Drill Co., New York, N. Y.
Horse Shoes.
 Old Dominion Iron & Nail Works Co., Richmond, Va.
 The Diamond State Steel Co., Wilmington, Del.
Hose.
 Boston Belting Co., Boston, Mass.
 Eureka Fire Hose Co., New York, N. Y.
 N. J. Car Spring & Rubber Co., Jersey City, N. J.
 Peerless Rubber Mfg. Co., New York, N. Y.
 Voorhees Rubber Mfg. Co., Jersey City, N. J.
Hotels.
 Southern Hotel, Baltimore, Md.
Hydrants.
 Glamorgan Pipe & Foundry Co., Lynchburg, Va.
 Ludlow Valve Mfg. Co., Troy, N. Y.
 Wood, R. D., & Co., Philadelphia, Pa.
Hydraulic Machinery.
 American, Chicago, Ill.
 Watson-Stillman Co., New York, N. Y.
 Wood, R. D., & Co., Philadelphia, Pa.
Hydraulic Rams.
 Niagara Hydraulic Engine Co., Chester, Pa.
Ice-Making Machinery and Supplies.
 Arctic Mch. Co., Canton, Ohio.
 Brown-Cochran Co., Lorain, O.
 Columbus Iron Works Co., Columbus, Ga.
 Creamery Package Mfg. Co., Chicago, Ill.
 Frick Co., Waynesboro, Pa.
 Healy Ice Machine Co., Chicago, Ill.
 McWilliams, Jos., & Co., Louisville, Ky.
 Pennsylvania Iron Works, Philadelphia, Pa.
 Remington Machine Co., Wilmington, Del.
 United Iron Works Co., Springfield, Mo.
 Viller Mfg. Co., Milwaukee, Wis.
 Vogt, Henry, Machine Co., Louisville, Ky.
 Wolf Co., The, Fred. W., Chicago, Ill.
 York Mfg. Co., York, Pa.
Incorporators. (Companies.)
 Delaware Corporation Co., Wilmington, Del.
 Delaware Trust Co., Wilmington, Del.
 District of Columbia Charter Co., Washington, D. C.
Indicators. (Steam Engines.)
 Amer. Stm. Gauge & Valve Mfg. Co., Jam. Plain, Mass.
 Crosby Steam Gauge & Valve Co., Boston, Mass.
 Scranton Steam Pump Co., Scranton, Pa.
Industrial Opportunities.
 Lynchburg Traction & Light Co., Lynchburg, Va.
 Lafourche Progressive Union, Thibodaux, La.
 Old Dominion Land Co., Newport News, Va.
 Rayne, La., C. W. Lyman, Secretary Progressive Union.
 Richards, M. V., L. & T. Agent, Washington, D. C.
 Seaboard Air Line, Portsmouth, Va.
 Southern Pacific Houston, Tex.
 St. Louis & San Francisco Railroad, St. Louis, Mo.
 Sutherland, Howard, Land Agent, Elkins, W. Va.
Industrial Railways.
 Koppel, Arthur, New York City.
Injectors.
 Jenkins Bros., New York, N. Y.
 Lunkenheimer Co., Cincinnati, O.
 Ohio Injector Co., Wadsworth, O.
 Penberthy Injector Co., Detroit, Mich.
 Schofield, J. B., Sons, Co., Macon, Ga.
 Simmons, John, Co., New York, N. Y.
Insulated Wire.
 Electrical Material Co., Baltimore, Md.
 Hazard Manufacturing Co., Wilkes Barre, Pa.
Insulators. (Glass.)
 Electrical Material Co., Baltimore, Md.
Insulator Pins.
 Alleghany Pin & Bracket Co., Covington, Va.
 Electrical Material Co., Baltimore, Md.
 Houston & Liggett, Lewisburg, Tenn.
Insulator Pin Machinery.
 Chattanooga Machinery Co., Chattanooga, Tenn.
Insurance.
 Hartford Steam Boiler Inspection & Insurance Co., Hartford, Conn.
 Maryland Casualty Co., Baltimore, Md.
Iron.
 Alabama Consol. Coal & Iron Co., Birmingham, Ala.
 American Sheet Steel Co., New York, N. Y.
 Bessemer-Fuller Co., Cleveland, O.
 Globe Rolling Mill, Cincinnati, O.
 Old Dominion Iron & Nail Works Co., Richmond, Va.

BAGS

Made from Cotton
and Burlap, for
every known
purpose.

Importers of all
widths and grades

BURLAP



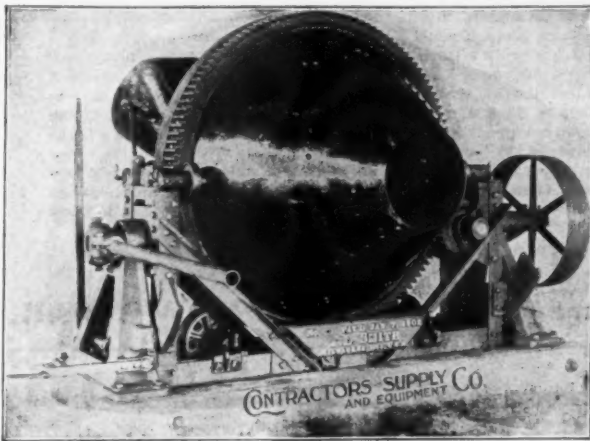
TWINE

All sizes and
all grades
made from
best selected
Fibres.

ROPE

WHY MIX BY HAND, WHEN

THE SMITH MIXER



will save three-
fourths of the labor
cost of hand mix-
ing?

At the same time
the concrete made
by THE SMITH
MIXER will be far
better than the same
material hand mix-
ed. With a Smith
Mixer you get two
results:

1. Your Work is the Best.
2. Its Cost is the Least.

Why not investi-
gate?
We will help you
to do so.

REPRESENTED BY: Colonial Supply Co., Boston, Mass.; Jno. L. Kirk, Pittsburgh, Pa.; Frank H. Woodruff, New York, N. Y.; The Wm. Pattison Supply Co., Cleveland, Ohio.; Henshaw Bulkley Co., San Francisco and Seattle.

Contractors' Supply & Equipment Co., Office and Salesrooms, 232 Fifth Ave., CHICAGO.

THE OLD RELIABLE

"Giant" Portland Cement,

Used exclusively on the NIAGARA FALLS TUNNEL and POWER HOUSE of the Niagara Falls Power Co. After five years the tunnel was recently inspected—32,400,000 cubic feet of water had rushed through every hour for five years. From one end of the tunnel to the other it was as strong as the day when it was finished. Not one of the 19,000,000 bricks used were out of place. The verdict was: "Practically absolutely perfect."

AMERICAN CEMENT CO.

22 S. 15th Street, Philadelphia, Pa.

Agencies:

LESLEY & TRINKLE CO.
22 S. 15th Street,
Philadelphia, Pa.

UNITED BUILDING MATERIAL CO.
13-21 Park Row, New York.
101 Milk St., Boston, Mass.

DEXTER
PORTLAND CEMENT.

HIGHEST ATTAINABLE STANDARD

Samuel H. French & Co., Sole Agents,

Established 1844.

Philadelphia.

The L. SCHREIBER & SONS CO.

Designers
Builders
of
Steel
Buildings.

Structural Steel,
Ornamental Iron,
CINCINNATI, OHIO.

Classified Index of Articles Advertised

FOR ALPHABETICAL
INDEX See Page 32.

Iron Brokers.

Armstrong, R. & Bro., Atlanta, Ga.
Cox, Jr., Justice, & Co., Inc., Philadelphia, Pa.
Males Co., Cincinnati, O.
Jaacks. (Lifting, Truck and Oil Well.)
Waters-Stillman Co., New York, N. Y.
Kettles. (Steam Jacket.)
Badger, E. B., & Sons Co., Boston, Mass.
Petroleum Iron Works Co., Washington, Pa.
Knife Grinders. (New Automatic.)
Fay, J. A., & Egan Co., Cincinnati, O.
Smith, H. B. Machine Co., Smithville, N. J.
Knitting Machinery.
Campbell & Clute Machine Co., Cohoes, N. Y.
Mayo Knit. Mch. & Needle Co., Franklin Falls, N. H.
McMichael & Wildman Mfg. Co., Norristown, Pa.
Eys & Treddick Co., Philadelphia, Pa.
Ruth Auto. Knitting Machine Co., York, Pa.
Scott & Williams, Philadelphia, Pa.

Lamps and Lanterns. (Kerosene.)

Hann, C. T., Mfg. Co., Rochester, N. Y.
Lamp. (Arc and Incandescent.)
Alexander, Jr., Co., S. B. Charlotte, N. C.
Electrical Material Co., Baltimore, Md.
Electric Supply Co., Savannah, Ga.
General Electric Co., Schenectady, N. Y.
Kentucky Electric Co., Owensboro, Ky.
Piedmont Electric Co., Asheville, N. C.
Shelby Electric Co., Shelby, O.
Standard Electric Mfg. Co., Norfolk, Va.
Sterling Electric Mfg. Co., Warren, O.
Westinghouse Electric & Mfg. Co., Pittsburgh, Pa.

Lamp & Alternator. (Incandescent.)

Incandescent Elec. Lgt. Manipulator Co., Boston, Mass.
Incandescent Elec. Lgt. Manipulator Co., Boston, Mass.
Pacific Electric Co., La Crosse, Wis.

Lamp Replacer. (Incandescent.)

Incandescent Elec. Lgt. Manipulator Co., Boston, Mass.
Incandescent Elec. Lgt. Manipulator Co., Boston, Mass.

Lamp Shades & Guards. (Incandescent.)

Incandescent Elec. Lgt. Manipulator Co., Boston, Mass.
Incandescent Elec. Lgt. Manipulator Co., Boston, Mass.

Lands.

Abbott, F. C. & Co., Charlotte, N. C.
Brotherton, Fendig & Co., Brunswick, Ga.
Clark, Chas. E., Augusta, Ga.
Martin & Bro., Augusta, Ga.
Richards, M. V. Land & Industrial Agt., Wash., D. C.
Seaboard Air Line, Portsmouth, Va.
Sutherland, Howard, Land Agent, Elkins, W. Va.
Southern Pacific, Houston, Tex.
St. Louis & San Francisco Railroad, St. Louis, Mo.
Watson, R. H. Co., St. Louis, Mo.
Winagar, O. H., St. Louis, Mo.

Lathes. (Engine.)

Baird Mch. Co., Pittsburg, Pa.
Barnes, W. F., & J. Co., Rockford, Ill.
Gibbes, W. H. M. Co., Columbia, S. C.
Robinson, W. U. & Son, Co., Baltimore, Md.
McCabe, J. J., New York, N. Y.
Price, S. M., Machinery Co., Norfolk, Va.
Savannah Loco. Works & Supply Co., Savannah, Ga.
Schumacher & Bore, Cincinnati, O.
Walke, Henry Co., Norfolk, Va.

Laundry Machinery.

Adams Laundry Machinery Co., Troy, N. Y.
Dawson, A. L. & Co., Chicago, Ill.
Sincilar Co., S. H., Chicago, Ill.
Wilson Laundry Machinery Co., Columbia, Pa.

Lead.

Robertson Mfg. Co., James, Baltimore, Md.
Lead and Tin. (Fig.)
Hertz, Theo., Metal Co., St. Louis, Mo.
Ryan & Co., J. J., Chicago, Ill.

Letters.

Brim, A. W., Seneca Falls, N. Y.
Lime.
Carolina Portland Cement Co., Charleston, S. C.
Kreighshaber, V. H., Atlanta, Ga.
Maryland Lime & Cement Co., Balto., Md.
Southern Lime & Cement Co., Charleston, S. C.
Warner, Charles Co., Wilmington Del.

Locomotive Builders.

American Locomotive Co., New York, N. Y.
Midwin Locomotive Works, Philadelphia, Pa.
Bryce, Jno. F., Mch. Co., Savannah, O.
Climax Mfg. Co., Corry, Pa.
Low, Edgar S., Co., Pittsburg, Pa.
Males Co., Cincinnati, O.

Loom Harrows.

Porter, H. K., Co., Pittsburg, Pa.
Loom Harrows.
American Supply Co., Providence, R. I.

Looms and Weaving Machinery.

American Supply Co., Providence, R. I.
Draper Co., Hopedale, Mass.
Fairmount Machine Co., Philadelphia, Pa.
Kilburn, Lincoln & Co., Fall River, Mass.

Lubricating Compounds.

Gleason Signal Oil Co., Galena, Pa.
Robinson, Wm. C. & Sons Co., Baltimore, Md.
Cook's Adam, Sons, New York, N. Y.

Lubricators and Oil Cups.

Cook's Sons, Adam, New York, N. Y.
Crosby Steam Gage & Valve Co., Boston, Mass.
Detroit Lubricator Co., Detroit, Mich.
Lunkenheimer Co., Cincinnati, O.
Penberthy Injector Co., Detroit, Mich.

Lumber.

Kirby Lumber Co., Houston, Tex.
Montgomery Lumber Mfg. Co., Montgomery, Ala.
Red Cypress Lumber Co., Macon, Ga.
Sutton Lumber Co., Macon, Ga.

Machinery. (Special.)

Edipese Mch. Co., Chicago, Ill.
Coffey, Charles, & Co., Brooklyn, N. Y.
McShannon Mfg. Co., Philadelphia, Pa.
Pennsylvania Iron Works, Philadelphia, Pa.

Machinery Foundry & Machine Co., Boye, Ford, Pa.

Machinery Bargains. (NEW & SEC. HAND.)
Afsack, Geo. E., New York, N. Y.
American, Chicago, Ill.

American Elec. Supply & Mfg. Co., New York, N. Y.

Armstrong, R. & Bro., Atlanta, Ga.
Baker, H. C. & Co., Philadelphia, Pa.
Bennett, G. L., New York, N. Y.
Booth & Fling, Ltd., Pittsburg, Pa.

Brown & Zortman Machinery Co., Pittsburg, Pa.

Caine & Plitt, Philadelphia, Pa.
Carlin Mch. & Supply Co., Allegheny, Pa.
Casey, D. L., Mch. Co., Springfield, O.
Chicago House Wrecking Co., Chicago, Ill.

Cleveland Belting & Machinery Co., Cleveland, O.

Clyde Mch. Works, Chicago, Ill.
Columbia Supply Co., Columbia, S. C.
Columbus Iron & Steel Co., Columbus, O.
Contractors' Equipment Co., Philadelphia, Pa.

Contractors' Supply Co., Pittsburg, Pa.

Contractors' Supply & Equipment Co., Chicago, Ill.
Ouz, Justice, Jr., & Co., Ltd., Philadelphia, Pa.
Driscoll, John T., & Co., Chicago, Ill.
Fidelity Machine & Metal Co., Philadelphia, Pa.

Garvin Machine Co., New York, N. Y.

Hartfelder-Garbutt Co., Savannah, Ga.
Hittner, H. A., Sons, Philadelphia, Pa.
Huntington Machinery & Supply Co., Wilkesbarre, Pa.
Kaiser, A. V. & Co., Philadelphia, Pa.
Keeney, L. E. & Co., New York, N. Y.

Stewart, John A., Electric Co., Cincinnati, O.

Straub Machinery Co., Cincinnati, O.
Thompson, Son & Co., New York, N. Y.
Toomey, Frank, Philadelphia, Pa.
Traump, Charles F., St. Louis, Mo.
Waters, John A. & Co., Richmond, Va.

Wicks Bros., Pittsburg, Pa.

Wolf, L. & Bro., Cincinnati, O.
Wood & Co., Chicago, Ill.
Machine Tools.
Baird Mch. Co., Pittsburg, Pa.

Barnes, W. F., & J. Co., Rockford, Ill.
Bickford Drill & Tool Co., Cincinnati, O.
Cincinnati Milling Machine Co., Cincinnati, O.
Greaves, Klusman & Co., Cincinnati, O.
Landis Tool Co., Waynesboro, Pa.

McCabe, J. J., New York, N. Y.

Pratt & Whitney, Hartford, Conn.
Price, S. M., Machinery Co., Norfolk, Va.
Savannah Loco. Works & Supply Co., Savannah, Ga.
Schumacher & Bore, Cincinnati, O.
Walke, Henry Co., Norfolk, Va.

Mail Chutes.

Outler Mfg. Co., Rochester, N. Y.
Mattresses.
Perfection Mattress Co., Birmingham, Ala.

Mechanical Draft.

Allington & Curtis, Saginaw, Mich.
American Blower Co., Detroit, Mich.
Andrews & Johnson Co., Chicago, Ill.
Cincinnati Exhaust & Blow Pipe Co., Cincinnati, O.

Six Mfg. Co., Baltimore, Md.

Hartford Blower Corp., Hartford, Conn.
Sturtevant, B. F., Co., Boston, Mass.
Memorial Windows.
Capital City Art Glass Works, Atlanta, Ga.

Mercantile Agencies.

International Mercantile Agency, New York, N. Y.
Merry-Go-Rounds.
Herschell-Spillman & Co., North Tonawanda, N. Y.

Metal-Working Machinery.

Baird Mch. Co., Pittsburg, Pa.
Barnes, W. F., & J. Co., Rockford, Ill.
Berth & Co., Cambridge City, Ind.
Bickford Drill & Tool Co., Cincinnati, O.

Cincinnati Milling Machine, Cincinnati, O.

Gibbes, W. H., & Co., Columbia, S. C.
Greaves, Klusman & Co., Cincinnati, O.
Landis Tool Co., Waynesboro, Pa.
McCabe, J. J., New York, N. Y.

Niagara Machine & Tool Works, Buffalo, N. Y.

Pratt & Whitney Co., Hartford, Conn.
Price, S. M., Machinery Co., Norfolk, Va.
Robinson, W. U. & Son, Co., Baltimore, Md.
Roversford Foundry & Machine Co., Roversford, Pa.

Savannah Loco. Works & Supply Co., Savannah, Ga.

Schumacher & Bore, Cincinnati, O.
Walke, Henry Co., Norfolk, Va.
Whitson Machine Co., D. E., New London, Conn.
Meters. (Gas.)
Pittsburg Meter Co., E. Pittsburg, Pa.

Meters. (Water.)

Pittsburg Meter Co., E. Pittsburg, Pa.
Worthington, Henry R., New York, N. Y.
Mill Engineers and Architects.
Collier & Brown, Atlanta, Ga.

Dyer, D. H., & Son, Fall River, Mass.

Makepeace, C. R., & Co., Providence, R. I.
Fraser, C. A. M. & Co., Providence, R. I.
Robbins, O. A., Charlotte, N. C.
Shaw, Fred, G., Augusta, Ga.

Tompkins, D. A., Co., Charlotte, N. C.

Whaley, W. B. Smith & Co., Columbia, S. C.
Wheeler & Runge, Charlotte, N. C.
Milling Machines.
Baird Mch. Co., Pittsburg, Pa.

Baird Mch. Co., Pittsburg, Pa.

Cincinnati Milling Machine Co., Cincinnati, O.
Walke, Henry Co., Norfolk, Va.
Whitson Machine Co., D. E., New London, Conn.
U. S. Mineral Wool Co., New York, N. Y.

Mining Machinery. (Gold, Copper, Slate, etc.)

Bartlett, C. O., & Snow Co., Cleveland, O.
Crescent Co., Geo. V., New York, N. Y.
Flory, S. Mfg. Co., Bangor, Pa.
Ingersoll-Sergeant Drill Co., New York, N. Y.

Jeffrey Mfg. Co., Columbus, O.

McLanahan-Stone Machine Co., Hollidaysburg, Pa.
Mecklenburg Iron Works, Charlotte, N. C.
Northern Electric Mfg. Co., Madison, Wis.
Rawson & Morrison Mfg. Co., Cambridge, Boston, Mass.

Sullivan Machinery Co., Chicago, Ill.

Mixing Machinery.
Bartlett, C. O., & Snow Co., Cleveland, O.
Contractors' Supply & Equipment Co., Chicago, Ill.
Drake Standard Mch. Wks., Chicago, Ill.

Dunning, W. D., Syracuse, N. Y.

Ransome Concrete Machinery Co., New York, N. Y.
Walker & Elliott, Wilmington, Del.
Mortar Colors.
Chatanooga Paint Co., Chattanooga, Tenn.

French, Samuel H., & Co., Philadelphia, Pa.

Nails. (Cut.)
Old Dominion Iron & Nail Works Co., Richmond, Va.
Nails. (Wire.)
Ludlow-Saylor Wire Co., The, St. Louis, Mo.

Oats Cleaner. (AUTOMATIC.)

Kesper Oats Cleaner Co., Chicago, Ill.
Office Fixtures.
Cushing Co., Baltimore, Md.

Dearborn Desk Co., Birmingham, Ala.

Himmel, M. L., & Son, Baltimore, Md.
Oils.
Cookson, Adam, Sons, New York, N. Y.

Bigl, W. M., & Co., Charleston, S. C.

Galeha-Signal Oil Co., Franklin, Pa.
Ironides Co., Columbus, O.
Miller Oil & Supply Co., Indianapolis, Ind.
Robinson, Wm. C. & Son, Co., Baltimore, Md.

Oil-Burning Appliances.

Petroleum Iron Works, Washington, Pa.
Rockwell Engineering Co., New York, N. Y.
Oilers.
Gem Mfg. Co., Pittsburg, Pa.

Ironides Co., Columbus, O.

Lunkenheimer Co., Cincinnati, O.
Organizers and Developers.
MacAfee, John Blair, Philadelphia, Pa.
Mechanics' Electric Co., Boston, Mass.

Railways & Light Co., Baltimore, Md.

Ridson, H. C., Washington, D. C.
Rutter, C. H., Easton, Pa.
Zell, Robt. Ross, Birmingham, Ala.
Packing.
Baltimore Engine Co., Baltimore, Md.

Broderick & Bacon Rope Co., St. Louis, Mo.

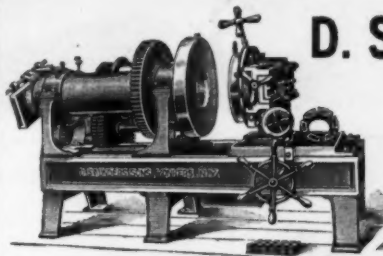
Broderick & Bacon Rope Co., St. Louis, Mo.
Jenkins Bros., New York, N. Y.
N. J. Car Spring & Rubber Co., Jersey City, N. J.
Peerless Rubber Mfg. Co., New York, N. Y.

Pennsylvania Rubber Co., Jersey City, N. J.

Voorhees Rubber Mfg. Co., Jersey City, N. J.
Paint.
Bird, J. A. & W., & Co., Boston, Mass.

Columbia Refining Co., New York, N. Y.

Fox, M. Ewing, & Co., New York, N. Y.



D. SAUNDERS' SONS

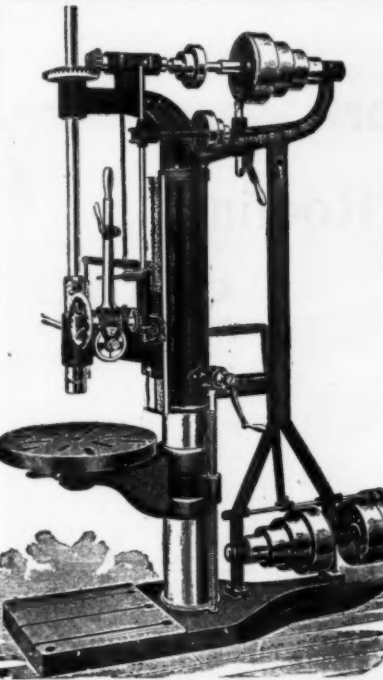
Manufacturers of

Pipe Cutting and
Threading Machinesfor Pipe-Mill and Steam Fitters' Use. Tapping Machines for Steam Fitting.
Also Steam and Gas Fitters' Hand Tools.

SEND FOR CIRCULARS.

No. 25 Atherton Street,

YONKERS, N. Y.



BARNES'

Upright Drills

COMPLETE LINE

Bench, Sensitive, Multiple,
Series, Stationary and
Sliding Head,BACK GEAR and
WITHOUT BACK GEAR.This cut represents our new 26 in.
Sliding Head Back-Geared Drill,
with Combined Lever, Wheel and
Power Feed; automatic stop and
quick return lever. The most rapid
and most convenient working drill
on the market today.

Write for illustrated catalogue.

SOLE MANUFACTURERS,

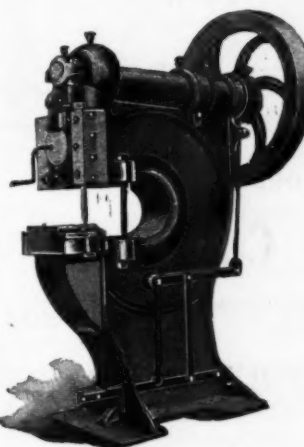
W. F. & JOHN BARNES CO.

221 Ruby Street, ROCKFORD, ILL.

CAREY MACHINERY & SUPPLY CO.

AGENTS, Baltimore, Md.

PRESSES

Cornice Brakes,
Heavy Bending Brakes,
Corrugating Machines,
Crimping Rolls,
Foot and Power Curved
Moulding Machines,
Foot and Power Presses,
Dies and Shears.

No. 4 Deep Throat.

The J. M. Robinson Mfg. Co.

CINCINNATI, OHIO.

GOLD "NORTON" PARIS,
MEDAL, 1900.

EMERY WHEELS

Universal Tool and Cutter Grinder.

NORTON EMERY WHEEL CO.,
WORCESTER, MASS.

CAREY MCHY. & SUPPLY CO., Agts., Baltimore, Md. CHICAGO STORE—25 So. Canal St.

WALL'S OILERS AND TORCHES MADE OF
STEEL.

Send for Booklet.

P. WALL MFG. SUPPLY CO., ALLEGHENY, PA.



BUY YOUR

Genuine

Bangor

Roofing

SLATE

Direct from the

MANUFACTURER

**GENUINE BANGOR SLATE
COMPANY,**

EASTON,

PENNA.

SEND US YOUR ORDERS FOR

Crucible Steel Castings

We begin casting the day following
receipt of patterns.

NORTMANN-DUFFKE FOUNDRY CO.

26th Ave., Layton Park,

MILWAUKEE, WIS.

**STEEL
CASTINGS**

OPEN HEARTH Steel Castings of every description, for
Engineering and Sugar Mill Machinery; Locomotive, Railroad and
Bridge Work, etc.

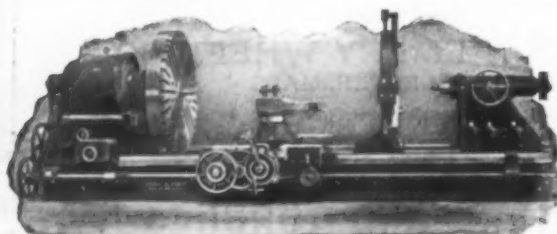
McHAPPIE Steel Castings of all shapes and sizes, from 1
lb. up. Superior for Crankshafts, Gearing and
other purposes where great wearing results are required.

CHESTER STEEL CASTINGS CO.
Works, CHESTER, PA. Office, 407 Sanson St., PHILA., PA.
Correspondence Solicited

BRASS FOUNDRY J. J. RYAN & CO.

68-74 West Monroe St., Chicago.

Best Bronze, Babblit Metals, Brass and Aluminum CASTINGS on Short Notice.



American Locomotive Co.

General Office, 25 Broad St., NEW YORK CITY.

BUILDERS OF

Locomotives

For all classes
of services.



**Mining Locomotives, Logging Locomotives,
Compressed Air Locomotives, Contractors' Locomotives,**

Schenectady Works, Schenectady, N. Y.
Brooks Works, Dunkirk, N. Y.
Pittsburg Works, Allegheny, Pa.
Richmond Works, Richmond, Va.

Cooke Works, Paterson, N. J.
Rhode Island Works, Providence, R. I.
Dickson Works, Scranton, Pa.
Manchester Works, Manchester, N. H.

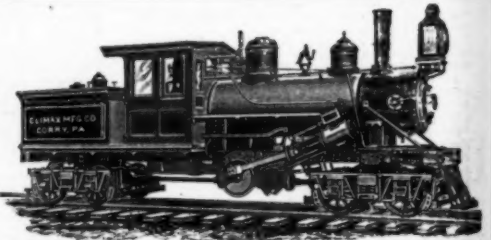
CLIMAX

Geared Locomotives,

For Wood or
Iron Rail.

Send for Illustrated Catalog.

CLIMAX MFG. CO.
CORRY, PA.



LIGHT LOCOMOTIVES.

All Gauges, Sizes and Designs.

Steam and Compressed Air.

5th Edition Catalogue mailed free to intending purchasers (or to
accommodate others on receipt of 50c. in stamps).

H. K. PORTER CO.

6th Ave., PITTSBURG, PA.

Locomotives, narrow and wide gauge on hand.



IRON FOR QUICK SHIPMENT STEEL

BARS, PLATES, SHEETS, TUBES, BEAMS, CHANNELS, ANGLES
STEEL TIRES, ETC.

We Carry a Large Stock of the Above in Our Warehouses.

Write for our Monthly Stock List.

THE GLOBE ROLLING MILL CO., Cincinnati, O.

ROSS-MEEHAN FOUNDRY CO.

Chattanooga
Tennessee.

**GREY & MALLEABLE
IRON FOUNDERS.**
M.G.B. COUPLERS.

CASTINGS

**BRASS, BRONZE AND
ALUMINUM CASTINGS**

OF EVERY DESCRIPTION.

MIAMI MANUFACTURING & PLATING CO. HAMILTON, O.

Savannah Locomotive Works & Supply Co.

Savannah, Georgia.

LOCOMOTIVES — Bought, Sold, Exchanged, Rebuilt.

AGENTS:

Nagle Engines and Boilers.
Niles-Bement-Pond Co.
Midvale Steel Co.
Weinman Machine Co.

Niles-Bement Pond Co.

High-Grade Metal

Working Tools.

Write us for Quotations.

Clas

Fair
Arnold
Barrett
Bird, W.
Buchanan
Chatham
Detroit
Dixon, C.
Eastern
French
Ironside
Simmons
Standard
Wisconsin
Fape
Armistead
Barrett
Buchanan
Eastern
Garrett
National
Standard
Fape
Bader
Fape
Adams
Past
Wisconsin
Fape
Pay, J. A.
Fape
Richmond
Ryan, J.
Fape
Richmond
Fape
Bader
Fape
Perf
Atchison
Beckley
Caldwell
Harrington
Hendrick
Ladlow
Mundt, C.
Stimpson
Fape
Gulf Ref
Fape
Baker, L.
Bradley
Cameron
Cresson
Fape
East Mill
Link-Bell
McLachlan
Raymond
Stimpson
Smith &
Tompkins
Valk &
Walker
Fape
Ryan, J.
Phosphor
Van Duzee
Fape
Stief, Ch.
Fig 1
Alabama
Bourne-F
Fape
International
West Fape
Pillo
Caldwell
Cresson
Golden's
Kasey P
Fape
Dimmick
General
Glamorgan
Moore, E.
U. S. Cast
Wood, R.
Fape
National
Wolf Co.
Fape
Robertson
Fape
American
Girard B
Kaiser, E.
Petroleum
Fape
Georgia V
Kriegsha
Maryland
Pomona
Stevens
Tallerday
Warner C
Fape
Dixie Mfg
Tallerday
Fape
American
Fape
Bourne-F
Columbia
General F
Simmons
Fape
Red Mfg
Bourne-F
Fape
Baird Mfg
Price, S. M.
Savannah
Waite, H.
Fape
French, S.
Fape
Hanson &
Fape
Red Mfg
Robertson
Simmons
Fape
Underwood
Fape
Brown, A.
Caldwell
Case Mfg
Cresson, C.
Fairmount
Kaiser P
Lane Mfg
Link-Bell
Minster
Northern
Nortyke
Wolf Co.
Wood's T
Fape
and
Bourne-F
Bushnell
Caldwell
Gibbs, W.

Westinghouse Steam Turbines

Excel in economy the best types of reciprocating engines, and effect a marked reduction in both initial and running expenses

Built in sizes from 400 K. W. to 5000 K. W. and upwards

For particulars address nearest sales office of

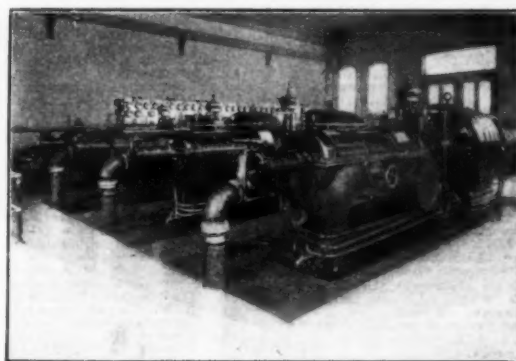
The Westinghouse Machine Co.

Works: East Pittsburg, Pa.

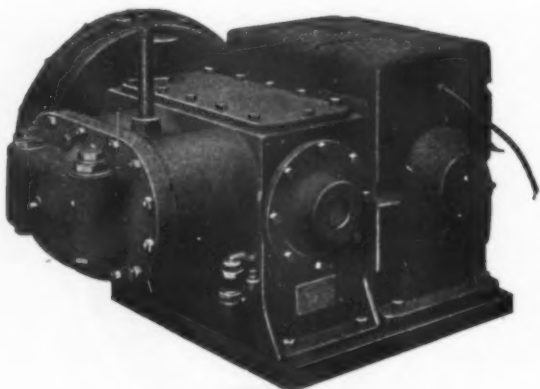
SALES OFFICES	{	New York, 10 Bridge Street.	Chicago, 171 La Salle St.
		Boston, 131 State St.	Detroit, Union Trust Bldg.
		Pittsburg, Westinghouse Bldg.	Philadelphia, Stephen Girard Bldg.

Designers and Builders of

Steam Engines, Gas Engines, Steam Turbines, Roney Mechanical Stokers



Four Westinghouse 400 K.W. Steam Turbine Generating Units Installed



Westinghouse

Motor-Driven Air Compressors

Adapted to supplying compressed air not only for Traction Car Brakes but also for Stationary Work and Portable Blowing Outfits.

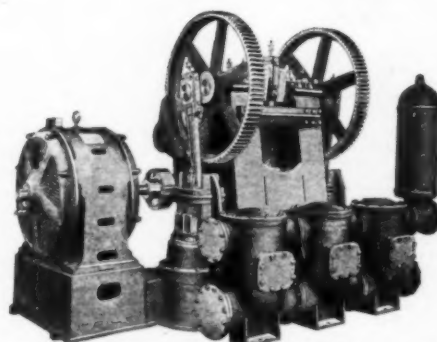
For information address

Westinghouse Traction Brake Co.

26 Cortland St., New York

**Power Brakes for Traction Service.
Combined Magnetic Brake and
Electric Car Heating Apparatus.**

Apparatus Manufactured by The Westinghouse Air Brake Co.



Westinghouse Induction Motor Geared to Gould Trip'ex Pump

Westinghouse

Motor-Driven Power Pumps

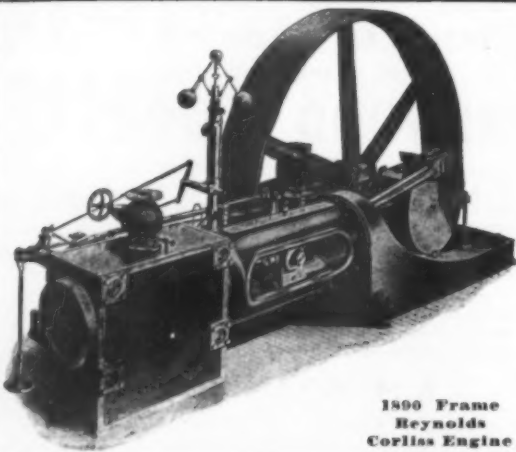
Give better and more economical service than others; this applies as well to all Westinghouse motor-driven apparatus.

Circulars 1042 and 1050 For Particulars

Westinghouse Electric & Mfg. Co.

Sales Offices in all Large Cities.

Pittsburg, Pa.



**1890 Frame
Reynolds
Corliss Engine**

ALLIS-CHALMERS COMPANY.

General Office, CHICAGO, New York Life Bldg.

SOLE BUILDERS OF

Reynolds Corliss Engines

FOR ALL POWER PURPOSES.

ENGINES ESPECIALLY ADAPTED FOR

COTTON MILLS and COTTON OIL MILLS.

BRANCH OFFICES

**NEW YORK, Empire Building.
BOSTON, Board of Trade Building.
PITTSBURG, 1212 Frick Building.**

CHARLOTTE, N. C., Trust Building.
ATLANTA, GA., Equitable Building.

Classified Index of Articles Advertised

For ALPHABETICAL
INDEX See Page 32.

Western Supply & Mfg. Co., East St. Louis, Ill.
Wohlam-Magor Engine Works, New York, N. Y.
Zelicker, W. A., Supply Co., St. Louis, Mo.
Ballroad Frogs and Switches.
Alabama Frog & Switch Co., Anniston, Ala.
American Frog & Switch Co., Hamilton, O.
Elkhart Frog & Crossing Works, Elkhart, Ind.
Koppel, Arthur, New York City.
May & Spalding, Atlanta, Ga.
Weir Frog Co., Cincinnati, O.
Wohlam-Magor Eng. Works, New York, N. Y.
Zelicker, W. A., Supply Co., St. Louis, Mo.
Boilers.
Bourne-Fuller Co., Cleveland, O.
Carry, George H., New York, N. Y.
Clark & Hines, Baltimore, Md.
Continental Car & Equipment Co., New York, N. Y.
Davis, O. W., New York, N. Y.
Frank, J. E., Savannah, Ga.
Hamel, Jno. J., & Co., Pittsburgh, Pa.
Hittner's, H. A., Sons, Philadelphia, Pa.
Johnson, Chas. F., Buffalo, N. Y.
Koppel, Arthur, New York, N. Y.
Leris, Henry & Co., Philadelphia, Pa.
Maclear, J. B., & Co., Suffolk, Va.
Main Co., Cincinnati, O.
Marland Rail Co., Cumberland, Md.
Moore, Edgar M., & Co., Pittsburgh, Pa.
Richardson & Co., Inc., Pittsburgh, Pa.
Robinson & Orr, Pittsburgh, Pa.
Rutter, C. H., Easton, Pa.
Schonthal Iron & Steel Co., Cumberland, Md.
Simper, Thos. W., & Co., Philadelphia, Pa.
Steel Rail Supply Co., The New York, N. Y.
Stringfellow & Webster, Richmond, Va.
Union Rail Co., Pittsburgh, Pa.
Western Supply & Mfg. Co., East St. Louis, Ill.
Wohlam-Magor Eng. Works, New York, N. Y.
Zelicker, W. A., Supply Co., St. Louis, Mo.
Reamers.
More Twist Drill & Machine Co., New Bedford, Mass.
Pratt & Whitney Co., Hartford, Conn.
Polk, A. J., & Son, Millersburg, Pa.
Regulators. (Water and Steam Pressure.)
Crosby Steam Gauge & Valve Co., Boston, Mass.
Repairs. (Engine & Pump.)
Underwood, H. B., & Co., Philadelphia, Pa.
Repairs. (MILL, STEAMSHIP AND LOCOMOTIVE.)
Alabama Iron Works, Mobile, Ala.
Riveters. (Pneumatic.)
Band Drill Co., New York, N. Y.
Road Machinery.
Acme Road Machinery Co., Frankfort, N. Y.
Kelly-Springfield Road Roller Co., Springfield, O.
Kilbourne & Jacobs Mfg. Co., Columbus, O.
Rock Crushers.
Austin Mfg. Co., Chicago, Ill.
Creson, Geo. V., Co., New York, N. Y.
Kent Mill Co., New York, N. Y.
N. J. Foundry & Machine Co., New York, N. Y.
Roofers' and Tanners' Supplies.
Chattanooga Roof & Fdry. Co., Chattanooga, Tenn.
Haggar Machine & Tool Works, Buffalo, N. Y.
Merchant & Co., Inc., Philadelphia, Pa.
Robinson, J. M. Mfg. Co., Cincinnati, O.
Roofing Tin. (SEE TIN ROOFING.)
Roofing. (Felt, Tar, Asphalt, Paper, etc.)
American Roofing Co., Mobile, Ala.
American Tinplate Co., Pittsburgh, Pa.
Armstrong Mfg. Co., The, Richmond, Va.
Asphalt Ready Roofing Co., New York, N. Y.
Barrett Mfg. Co., Philadelphia, Pa.
Buchanan-Foster Co., Philadelphia, Pa.
Bird, F. W., & Co., East Walpole, Mass.
Bird, J. A., & W. C., Boston, Mass.
Carry, Philip, Mfg. Co., Lockland, O.
Chattanooga Roof & Fdry. Co., Chattanooga, Tenn.
Eastern Granite Roofing Co., New York, N. Y.
Garrett, C. S., & Son, Co., Philadelphia, Pa.
Maryland Line & Cement Co., Balto., Md.
Miller Oil & Supply Co., Indianapolis, Ind.
National Roofing & Supply Co., Louisville, Ky.
Scott & Co., Cincinnati, O.
Standard Paint Co., New York, N. Y.
Stowell Mfg. Co., Jersey City, N. J.
Warren Chemical & Mfg. Co., New York, N. Y.
Wulf, W. C., & Co., Louisville, Ky.
Zelicker, W. A., Supply Co., St. Louis, Mo.
Roofing. (Metal Shingles.)
Chattanooga Roof & Fdry. Co., Chattanooga, Tenn.
Corrigan Metal Roofing Co., Philadelphia, Pa.
Merchant & Co., Inc., Philadelphia, Pa.
Montross Metal Shingle Co., Camden, N. J.
Penn Metal Ceiling & Roofing Co., Phila., Pa.
Roofing. (Slate.)
Downman-Doxier Mfg. Co., Atlanta, Ga.
Galt, John, & Sons, New York, N. Y.
Genuine Bangor Slate Co., Easton, Pa.
McKenna, David, Slaton, Pa.
Roofing and Siding. (Metal.)
Corrigan Metal Roofing Co., Philadelphia, Pa.
Downman-Doxier Mfg. Co., Atlanta, Ga.
Easton Foundry & Machine Co., Easton, Pa.
Merchant & Co., Inc., Philadelphia, Pa.
Passaic Steel Co., Paterson, N. J.
Scaife, Wm. B., & Sons Co., Pittsburgh, Pa.
Simper, Thos. W., & Co., Philadelphia, Pa.
Virginia Bridge & Iron Co., Roanoke, Va.
Ropes. (Transmission.)
American Mfg. Co., The, New York, N. Y.
Broderick & Bascom Rope Co., St. Louis, Mo.
Caldwell, W. E., Co., Louisville, Ky.
Columbian Cordage Co., Auburn, N. Y.
Creson Co., Geo. V., Co., New York, N. Y.
Ironclad Co., Columbus, O.
Link-Belt Engineering Co., Philadelphia, Pa.
Woods' Sons, T. B., Chambersburg, Pa.
Rubber Goods.
Boston Belting Co., Boston, Mass.
Eureka Fire Hose Co., New York, N. Y.
New Jersey Car Spring & Rubber Co., Jersey City, N. J.
Pennsylvania Rubber Co., New York, N. Y.
Voorhees Rubber Mfg. Co., Jersey City, N. J.
Seeds. (Fertilizer.)
Bailey, John T., & Co., Philadelphia, Pa.
Safety Water Columns and Gauges.
Amer. Sizing Gauge & Valve Mfg. Co., Jam. Plain, Mass.
Crosby Steam Gauge & Valve Co., Boston, Mass.
Lunkenshimer Co., Cincinnati, O.
Bellance Gauge Column Co., Cleveland, O.
Safes and Vaults.
York Safe & Lock Co., York, Pa.
Sash, Door and Blind Factories.
Montgomery Lumber Mfg. Co., Montgomery, Ala.
Saws. (Band.)
Atkins, E. C., & Co., Indianapolis, Ind.
Pay, J. A., & Egan Co., Cincinnati, O.
Smith, H. B., Machine Co., Smithville, N. J.
Saw Gummer.
Miller Oil & Supply Co., Indianapolis, Ind.
Saws. (See Woodworking Machinery.)
Atkins, E. C., & Co., Indianapolis, Ind.
Gibbs, W. H., & Co., Columbia, S. C.
Hutter Bros., Rochester, N. Y.
Miller Oil & Supply Co., Indianapolis, Ind.
Smith, H. B., Machine Co., Smithville, N. J.
Saw Mills.
Montgomery Lumber Mfg. Co., Montgomery, Ala.
Red Cypress Lumber Co., Macon, Ga.
Stetson Lumber Co., Macon, Ga.
Wilkins, Van S., Lumber Co., Mobile, Ala.
Saw-Mill Machinery.
Bailey-Lebby Co., The, Charleston, S. C.
Beach, H. W., Montrose, Pa.
Cameron & Barkley Co., Charleston, S. C.
Chattanooga Machinery Co., Chattanooga, Tenn.
Columbia Supply Co., Columbia, S. C.
DeLoach Mill Mfg. Co., Atlanta, Ga.
Farquhar Co., A. B., Ltd., York, Pa.
Pay, J. A., & Egan Co., Cincinnati, O.
Prick Co., Waynesboro, Pa.
Gibbs, W. H., & Co., Columbia, S. C.
Hartfelder-Garbutt Co., Savannah, Ga.
Hench & Dromgold Co., York, Pa.
Hill, Wm. E., & Co., Kalamazoo, Mich.

Lane Mfg. Co., Montpelier, Vt.
Mecklenburg Iron Works, Charlotte, N. C.
Schofield's, J. S., Sons Co., Macon, Ga.
Smith, H. B., Machine Co., Smithville, N. J.
Soule Steam Feed Works, Meridian, Miss.
Southern Eng. & Boiler Works, Jackson, Tenn.
Stratton & Bragg Co., Petersburg, Va.
Union Iron Works Co., Selma, Ala.
Zelicker, W. A., Supply Co., St. Louis, Mo.
Saw Sharpeners and Files. (Cotton Gin.)
Carver Cotton Gin Co., East Bridgewater, Mass.
Scales.
McDonald Bros., Pleasant Hill, Mo.
Osgood Scale Co., Binghamton, N. Y.
Richardson Scale Co., New York, N. Y.
Standard Scale & Supply Co., Ltd., Pittsburgh, Pa.
Scales. (Automatic.)
Richardson Scale Co., New York, N. Y.
Scrap Iron and Steel.
May & Spalding, Atlanta, Ga.
Cohen-Schwartz Rail & Steel Co., St. Louis, Mo.
Screens. (Fly, Window and Door.)
Burrows, E. T., Co., Portland, Me.
New Jersey Wire Cloth Co., Trenton, N. J.
Screens. (Ore, Cokes, etc.)
Atchison, E., Perforated Metal Co., Chicago, Ill.
Beckley, A. J., Co., Garwood, N. J.
Creson Co., Geo. V., New York, N. Y.
Harrington & King Perforating Co., Chicago, Ill.
Hendrick Mfg. Co., Ltd., Carbondale, Pa.
Jeffrey Mfg. Co., The, Columbus, O.
Ludlow-Saylor Wire Co., The, St. Louis, Mo.
New Jersey Wire Cloth Co., Trenton, N. J.
Meyers Mfg. Co., Fred. J., Hamilton, O.
Mundt & Sons, Charles, New York, N. Y.
McLanahan-Stone Machine Co., Hollidaysburg, Pa.
Screw Plates.
Polk, A. J., & Son, Millersburg, Pa.
Screw Saws. (See Woodworking Machinery.)
Pay, J. A., & Egan Co., Cincinnati, O.
Smith, H. B., Machine Co., Smithville, N. J.
Seals. (Stock Certificates, etc.)
Middleton, J. W., & Co., Chicago, Ill.
National Seal Works, Richmond, Va.
Separators. (Dust.)
Allington & Curtis Mfg. Co., Saginaw, Mich.
Cincinnati Exhaust & Blow Pipe Co., Cincinnati, O.
Dixie Mfg. Co., Baltimore, Md.
Hartford Blower Corp., Hartford, Conn.
Sturtevant Co., E. F., Boston, Mass.
Separators. (Steam and Oil.)
Bates Machine Co., Joliet, Ill.
Scranton Steam Pump Co., Scranton, Pa.
Webster & Co., Warren, Philadelphia, Pa.
Shapers.
Bailey-Lebby Co., Charleston, S. C.
Baird Mch. Co., Pittsburgh, Pa.
Price, S. M., Machinery Co., Norfolk, Va.
Waite, Henry Co., Norfolk, Va.
Sharpening Stones.
Pike Mfg. Co., Pike Station, N. H.
Vitrified Wheel Co., Westfield, Mass.
Sheet Steel and Iron.
Bourne-Fuller Co., Cleveland, O.
Globe Rolling Mill, Cincinnati, O.
Passaic Steel Co., Paterson, N. J.
Simper, Thos. W., & Co., Philadelphia, Pa.
Shingles. (Metal.)
Chattanooga Roof & Fdry. Co., Chattanooga, Tenn.
Corrigan Metal Roofing Co., Philadelphia, Pa.
Merchant & Co., Inc., Philadelphia, Pa.
Montross Metal Shingle Co., Camden, N. J.
Penn Metal Ceiling & Roofing Co., Phila., Pa.
Ship Builders. (Iron and Steel.)
Baltimore Shipbuilding & Dry Dock Co., Balto., Md.
Newport News Shipbuilding & Dry Dock Co., Newport News, Va.
Shutters. (Steel Rolling.)
Kinross Mfg. Co., Columbus, O.
Skylights.
Chattanooga Roof & Fdry. Co., Chattanooga, Tenn.
Downman-Doxier Mfg. Co., Atlanta, Ga.
Merchant & Co., Inc., Philadelphia, Pa.
Van Borden, E. Co., Boston, Mass.
Wulf, W. C., & Co., Louisville, Ky.
Slate. (Roofing.)
Galt, John, & Sons, New York, N. Y.
Genuine Bangor Slate Co., Easton, Pa.
McKenna, David, Slaton, Pa.
Sliders' Tools.
Galt, John, & Sons, New York, N. Y.
Smoke Stacks. (Iron and Steel.)
Girard Boiler & Mfg. Co., Girard, O.
Keeler, E. Co., Williamsport, Pa.
Lombard Iron Works & Supply Co., Augusta, Ga.
McGuffie & Kuntz, Allentown, Pa.
Petroleum Iron Works Co., Washington, Pa.
Schofield's, J. S., Sons Co., Macon, Ga.
Solder.
Hertz, Theo., Metal Co., St. Louis, Mo.
Ryan, J. J., & Co., Chicago, Ill.
Spinning Frames.
Electrical Material Co., Baltimore, Md.
Spelter.
Hertz, Theo., Metal Co., St. Louis, Mo.
Spikes.
The Diamond Steel Co., Wilmington, Del.
Springs. (Bicycle Saddle, Machinery, Railway and Spiral.)
Boston Belting Co., Boston, Mass.
Cary Spring Works, New York, N. Y.
Ludlow-Saylor Wire Co., The, St. Louis, Mo.
Sprinklers. (Automatic.)
Bailey-Lebby Co., Charleston, S. C.
General Fire Extinguisher Co., Providence, R. I.
Stamp Mills.
Gainesville Iron Works, Gainesville, Ga.
Mecklenburg Iron Works, Charlotte, N. C.
Stamps. (BRASS, IRON, ETC.)
Huller, John G., & Co., Baltimore, Md.
National Seal Works, Richmond, Va.
Standpipes.
Girard Boiler & Mfg. Co., Girard, O.
Hartley Boiler Works, Montgomery, Ala.
Keeler, E. Co., Williamsport, Pa.
Lombard Iron Works & Supply Co., Augusta, Ga.
Means & Fulton Iron Work, Birmingham, Ala.
Petroleum Iron Works Co., Washington, Pa.
Virginia Bridge & Iron Co., Roanoke, Va.
Steam Fitters Supplies.
General Fire Extinguisher Co., Providence, R. I.
McWilliams, Jos., & Co., Louisville, Ky.
Reed Mfg. Co., Erie, Pa.
Simmons, John, Co., New York City.
Steam Gages.
American Steam Gauge & Valve Mfg. Co., Jamaica Plain, Mass.
Crosby St. Gauge & Valve Co., Boston, Mass.
Lunkenshimer Co., Cincinnati, O.
Steam Heating.
General Fire Extinguisher Co., Providence, R. I.
Keeler, E. Co., Williamsport, Pa.
Peck-Hammond Co., The, Cincinnati, O.
Tompkins, D. A., Co., Charlotte, N. C.
Webster & Co., Warren, Camden, N. J.
Steam Hovels. (See Dredges and Excavators.)
Steam Traps.
American Blower Co., Detroit, Mich.
Haines, W. S., Co., Phila., Pa.
Sturtevant Co., E. F., Boston, Mass.
Steamship Lines.
Baltimore Steam Packet Co., Baltimore, Md.
Chesapeake Steamship Co., Baltimore, Md.
Merchant & Miners' Trans. Co., Baltimore, Md.
Steel. (Manufacturers of.)
American Sheet Steel Co., New York, N. Y.
Bourne-Fuller Co., Cleveland, O.
Chester Steel Castings Co., Philadelphia, Pa.
Globe Rolling Mill, Cincinnati, O.
Kennedy, Walter, Pittsburgh, Pa.
Passaic Steel Co., Paterson, N. J.
The Diamond Steel Co., Wilmington, Del.
Steel Buildings. (Designers, Builders.)
Easton Foundry & Machine Co., Easton, Pa.

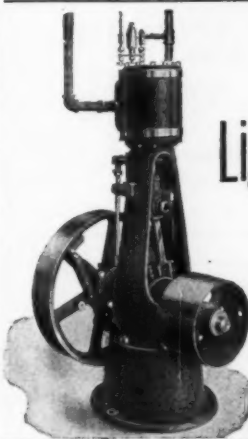


"ABC"
Fans and Blowers
for all uses
AMERICAN BLOWER CO
DETROIT, MICH.
NEW YORK CHICAGO LONDON

PHOENIX IRON WORKS CO.

MEADVILLE PA.

ENGINES AND BOILERS

For Direct Connection
TO DYNAMO, OUR

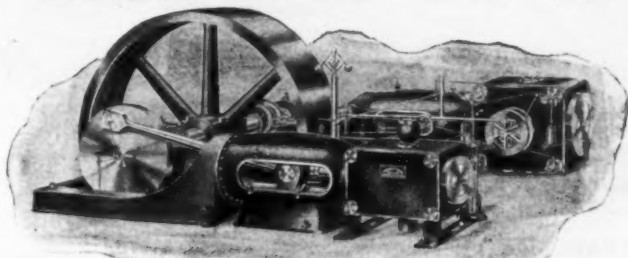
Light Vertical Automatic Engines

have no superior. We have just brought out a line of direct connected sets which we know will interest you. Let us send you our Catalogue "N" and quote you prices. Both will surprise you.

WM. E. HILL & CO.

North Park Street, KALAMAZOO, MICH.

HARDIE-TYNES MFG. CO.



Box 406,

Manufacturers,

BIRMINGHAM, ALA.

ARE YOU LOOKING

FOR

DURABILITY

AND

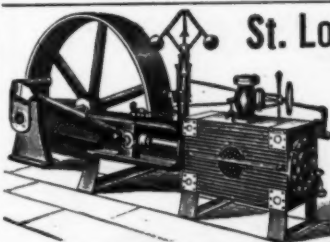
ECONOMY IN

ENGINES AND BOILERS?

Write to Us. Send for Catalogue 13.

THE BROWNELL & CO., DAYTON, OHIO.

THE GREENSBORO SUPPLY CO., Greensboro, N. C., Selling Agents for North and South Carolina and Northern Georgia.



SEND FOR OUR NEW CATALOGUE.

St. Louis Iron & Machine Works,

100 Chouteau St., ST. LOUIS, MO.

BUILDERS OF

St. Louis Corliss Engine

50 to 2000 H. P.

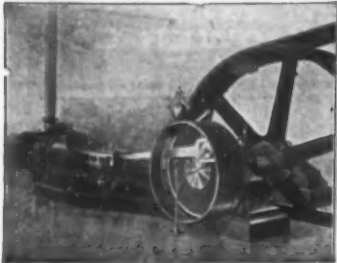
Brick Machinery.

Harrisburg Foundry & Machine Works, Engines

HARRISBURG, PA., U. S. A.

SOUTHWARK-FOUNDRY & MACHINE CO.

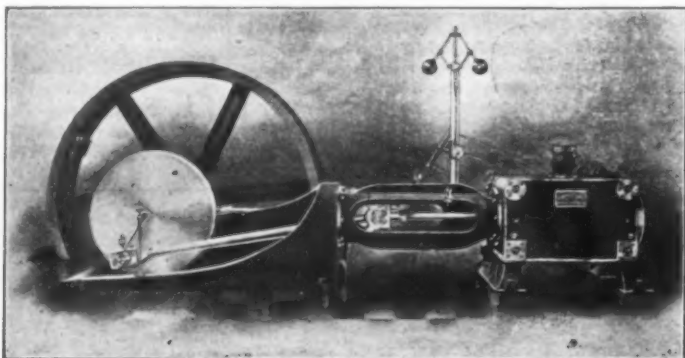
PHILADELPHIA, PA.



SOLE BUILDERS OF THE
PORTER ALLEN ENGINE
ADAPTED TO EVERY CLASS OF SERVICE

...BLOWING ENGINES...
WEISS CENTRAL CONDENSING PLANTS.

The WILLIAM TOD CO.
Engine Builders
YOUNGSTOWN, OHIO.



MONARCH CORLISS

Heavy Duty and Girder Frame.
The latest designs in Mechanical Engineering.
H. N. STRAIT MFG. CO.

QUICK DELIVERIES.

Adams Street, Kansas City.

THE C. & G. COOPER CO.

BUILDERS OF

HIGH GRADE

**Cooper-Corliss
ENGINES.**

Complete Steam Plants
a Specialty.

Home Office and Works, MT. VERNON, O.

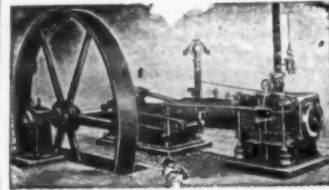
Branch Offices:

ATLANTA, 8 Austell Bldg.
CHARLOTTE, O. A. Robbins.
NEW YORK, 1022 Havemeyer Bldg.
BOSTON, 411 Weld Bldg.
CHICAGO, 1436 Monadnock Block.

SOUTHERN ENGINE & BOILER WORKS, JACKSON, TENN.

—Builders of—

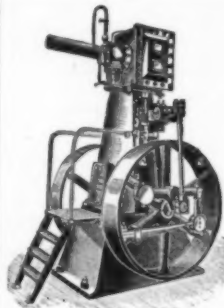
Corliss Engines,
Slide-Valve Engines, Tubular
Boilers and Saw-Mill
Machinery.



Shepherd Steam Engines

For All Service.

SINGLE EXPANSION
AND COMPOUND.



Shepherd Engineering Co.

Box M.

FRANKLIN, PA., U. S. A.

UNION IRON WORKS COMPANY,
SELMA, ALA., U. S. A.

Manufacturers of

Engines, Boilers, Live Rolls and Logging Cars.
LOCOMOTIVE REBUILDING A SPECIALTY.

BOILERS

With Rivet Holes Drilled after Plates are Bent and in Position. Tanks and Sheet Iron Works, Engines, Cotton Gins and Presses. Machinery for Fertilizer Works and Phosphate Washers, Asbestos Magnesia Pipe Covering and Magnesia Cement Felting for Boilers, Domes, Steam Piping, etc.

VALK & MURDOCH IRON WORKS, Charleston, S. C.



THE E. W. VANDUZEN CO.,

Established 1837.

Prop's THE BUCKEYE BELL AND BRASS FOUNDRY,

CINCINNATI, OHIO, U. S. A.

Founders of High Grade Castings in

BRASS, GUN METAL, BRONZE and PHOSPHOR BRONZE.

For Elasticity and Great Tensile Strength, we recommend our
POMPEIAN BRONZE.

Babbitt and Anti-Friction Metals.

Correspondence Solicited.

To Owners of BOILERS

Are you acquainted with

**Union Boiler-Tube
Cleaner?**

A first-class
boiler-tube cleaner,
which removes
all the dirt.
Highly indorsed by
owners of boilers.
Let us send you
some letters of praise.

POWER—IMPULSE

Gem Mfg. Co.

Spruce St., near 33d, Pittsburg, Pa.

Engines, Boilers, Saw Mills, Presses.

Write to

GENERAL MANUFACTURERS OF

MECKLENBURG IRON WORKS, Charlotte, N. C.

MACHINERY

Clas

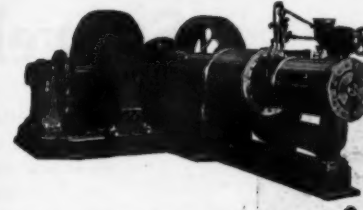
Frink & General
Passaic
Scotch
Schreib
Va. Br
Stee
Larob
Hull
McMill
Stoe
Hull
Middle
Nation
Stee
West
West
Star
Halt
Hir
Belmont
Bourne
Chesape
Easton
Eureka
General
Girard
Globe
Moore
Passaic
Scotch
Schreib
Simpers
Virginia
Hull
Electric
Standard
Wesco
West
Tank
Caldwell
Flint &
Girard
Hammon
Harry
Harley
Koele
Lomb
Means
McGaff
Petrole
Scotch
Schreib
Smith
Tallerd
Tompki
Valk &
Virginia
Vogt, H
Wood, R
Tank
Caldwell
Cypress
Davis, G
Lewis, H
Tape
Tape
Tele
Benbow
Tele
Alexand
Electric
Electric
Fiedmon
Standard
Wesco
Tele
Electric
Houston
Internat
Terra
Merchan
Simpers
Terra
Kriegsha
Pomona
Stevens
Text
Three
Parquha
Cardwell
Gibbs, V
Tin
American
Tina
American
Merchan
Simpers
Tires
Globe R
Larob
Toba
Buckey
Cardwell
Tools
Tools
Barnes, V
Morse, T
Folk, A.
Folk & V
Tools
Band Dr
Niagara
Tools
Tools
Gem Mfg
Wall, P.
Towe
Caldwell
Flint & V
Tompki
Tools
American
Tram
Gibson
Moyer, J.
New Jer
Spidel, J.
Tram
Broderick
Caldwell
Cresson
Flory, H.
Jeffrey M
Lidgerwo
Link-Bell
McLanah
Trenton
Truck
Horne, V
Tube
Gem Mfg
Tubing
Ludlow
Turbi
Turbi
Westingh
Westingh
Turner
Koppel, A
Vale Co.
Passaic
Virginia
Type
Cushing
Dearborn
Himmel

Classified Index of Articles Advertised

FOR ALPHABETICAL
INDEX See Page 32

Frink & Hazen, Baltimore, Md.
General Supply & Construction Co., New York, N. Y.
Passaic Steel Co., Paterson, N. J.
Schreiber, L. & Sons Co., Cincinnati, O.
Va. Bridge & Iron Co., Roanoke, Va.
Steel Couplers. (Automatic.)
Latrobe Steel & Coupler Co., Philadelphia, Pa.
Stencils.
Hulst, John G., & Co., Baltimore, Md.
Stills. (Turpentine.)
McMillan Bros. Co., Mobile, Ala.
Stock Certificates, Bonds and Seals.
Hulst, John G., & Co., Baltimore, Md.
Middleton, J. W., & Co., Chicago, Ill.
National Seal Works, Richmond, Va.
Stokers. (Mechanical.)
Westinghouse, Church, Kerr & Co., Pittsburgh, Pa.
Westinghouse Machine Co., Pittsburgh, Pa.
Storage.
Baltimore Fidelity Warehouse Co., Baltimore, Md.
Structural Steel and Iron.
Belmont Iron Works, Philadelphia, Pa.
Bourne-Fuller Co., Cleveland, O.
Chesapeake Iron Works, Baltimore, Md.
Easton Foundry & Machine Co., Easton, Pa.
Eureka Supply Co., Chattanooga, Tenn.
General Supply & Construction Co., New York, N. Y.
Girard Boiler & Mfg. Co., Girard, O.
Globe Rolling Mill, Cincinnati, O.
Moore, Edgar M., & Co., Pittsburgh, Pa.
Passaic Steel Co., Paterson, N. J.
Schreiber, L. & Sons Co., The Cincinnati, O.
Simpers, Thos. W., & Co., Philadelphia, Pa.
Virginia Bridge & Iron Co., Roanoke, Va.
Switchboards, Switches, etc.
Electrical Material Co., Baltimore, Md.
Standard Electric Co., Norfolk, Va.
Wesco Supply Co., St. Louis, Mo.
Westinghouse Electric & Mfg. Co., Pittsburgh, Pa.
Tanks. (Iron and Steel.)
Caldwell, W. E., Louisville, Ky.
Flint & Walling Mfg. Co., Kendallville, Ind.
Girard Boiler & Mfg. Co., Girard, O.
Hammond Iron Works, Warren, Pa.
Harry Bros. Co., Dallas, Tex.
Hartley Boiler Works, Montgomery, Ala.
Kaiser Co., E. Williamsport, Pa.
Lombard Iron Works & Supply Co., Augusta, Ga.
Means & Fulton Iron Works, Birmingham, Ala.
McGuffie & Kountz, Alliance, O.
Petroleum Iron Works Co., Washington, Pa.
Schiff, W. B., & Sons Co., Pittsburgh, Pa.
Schulz, J. S., Sons Co., Macon, Ga.
Smith Co., S. Morgan, York, Pa.
Tallard Steel Pipe & Tank Co., Waterloo, Ia.
Tompkins, D. A., Co., Charlotte, N. C.
Valk & Murdoch Iron Works, Charleston, S. C.
Virginia Bridge & Iron Co., Roanoke, Va.
Vogt, Henry, Machine Co., Louisville, Ky.
Wood, R. D., & Co., Phila., Pa.
Tanks. (Wood.)
Caldwell, W. E., Louisville, Ky.
Cypress Lumber Co., Apalachicola, Fla.
Davis, G. M., & Son, Palatka, Fla.
Lewis, H. F., & Co., Ltd., New Orleans, La.
Tupelo Tank Co., Mobile, Ala.
Tapes. (Measuring.)
Lufkin Rule Co., Saginaw, Mich.
Telephone Brackets.
Denbow Co., The Philadelphia, Pa.
Telephones. (Supplies, Equipment.)
Alexander, Jr., Co., S. B., Charlotte, N. C.
Electric Supply Co., Savannah, Ga.
Electrical Material Co., Baltimore, Md.
Piedmont Electric Co., Asheville, N. C.
Standard Electric Co., Norfolk, Va.
Wesco Supply Co., St. Louis, Mo.
Telephone Poles.
Electrical Material Co., Baltimore, Md.
Houston & Liggett, Lewisburg, Tenn.
International Crocoting & Const. Co., Galveston, Tex.
Term Paper.
Merchant & Co., Inc., Philadelphia, Pa.
Simpers, Thos. W., & Co., Philadelphia, Pa.
Terra Cotta.
Kriegshaber, V. H., Atlanta, Ga.
Pomona Terra Cotta Co., Pomona, N. C.
Stevens, H., Sons, Co., Macon, Ga.
Textile Machinery. [See Cotton Mill Mach.]
Threshers.
Farquhar, A. B., Co., York, Pa.
Cardwell Machine Co., Richmond, Va.
Gibbs, W. H., & Co., Columbia, S. C.
Tin. (Roofing.)
American Tinplate Co., New York, N. Y.
Tinplate.
American Tinplate Co., New York, N. Y.
Merchant & Co., Inc., Philadelphia, Pa.
Simpers, Thos. W., & Co., Philadelphia, Pa.
Tires, Steel. (Locomotive and Car.)
Globe Rolling Mill, Cincinnati, O.
Latrobe Steel Co., Philadelphia, Pa.
Tobacco Machinery.
Buckeye Iron & Brass Works, Dayton, O.
Cardwell Machine Co., Richmond, Va.
Tools. (Machinery.) [See Machine Tools.]
Tools. (Machine.)
Barnes, W. F., & John, Co., Rockford, Ill.
Morse Twist Drill & Machine Co., New Bedford, Mass.
Polt, A. J., & Son, Millersburg, Pa.
Patt & Whitney Co., Hartford, Conn.
Tools. (Pneumatic.)
Rand Drill Co., New York, N. Y.
Tools. (Tinner's.)
Niagara Machine & Tool Works, Buffalo, N. Y.
Tools. (For Rwy. Rep. Shops.) [See Port. Tools.]
Torches.
Gem Mfg. Co., Pittsburgh, Pa.
Wall, P. Mfg. Co., Allegheny, Pa.
Towers. (Steel and Wood.)
Caldwell, W. E., Louisville, Ky.
Flint & Walling Mfg. Co., Kendallville, Ind.
Tompkins, D. A., Co., Charlotte, N. C.
Towing Machines. (AUTO. STEAM.)
American Ship Windlass Co., Providence, R. I.
Tramway. (Overhead.)
Cohoes Iron Foundry & Machine Co., Cohoes, N. Y.
Koyr, J. W., & Co., Philadelphia, Pa.
New Jersey Fdy. & Mch. Co., New York, N. Y.
Spindel, J. G., Reading, Pa.
Tramway. (Wire Rope.)
Broderick & Bascom Rope Co., St. Louis, Mo.
Caldwell, H. W., & Sons Co., Chicago, Ill.
Creson Co., George V., New York, N. Y.
Herr, S. Mfg. Co., Montreal, Pa.
Jeffrey Mfg. Co., Columbus, O.
Lidgerwood Mfg. Co., New York, N. Y.
Link-Belt Engineering Co., Nicetown (Phila.), Pa.
McLanahan-Stone Machine Co., Hollidaysburg, Pa.
Trenton Iron Co., Trenton, N. J.
Trucks and Brays. (Hand.)
Hornor, W. P., Mfg. Co., Danville, Va.
Tube Cleaners.
Gem Mfg. Co., Pittsburgh, Pa.
Tubing.
Ludlow-Saylor Wire Co., The St. Louis, Mo.
Turbines. [See Water Wheels.]
Turbines. (Steam.)
Westinghouse, Church, Kerr & Co., Pittsburgh, Pa.
Westinghouse Machine Co., Pittsburgh, Pa.
Turntables.
Koppel, Arthur, New York City.
Valve Co. Cincinnati, O.
Passaic Steel Co., Paterson, N. J.
Virginia Bridge & Iron Co., Roanoke, Va.
Typewriter Table Cabinets.
Cushing & Co., Baltimore, Md.
Dearborn Desk Co., Birmingham, Ala.
Himmel, M. L., & Co., Baltimore, Md.

Valves.
Amer. Stm. Gauge & Valve Mfg. Co., Jam. Plain, Mass.
Boston Belting Co., Boston, Mass.
Columbia Supply Co., Columbia, S. C.
Crosby Steam Gauge & Valve Co., Boston, Mass.
General Fire Extinguisher Co., Providence, R. I.
Hamorgan Pipe & Foundry Co., Lynchburg, Va.
Jenkins Bros., New York, N. Y.
Ludlow Valve Mfg. Co., Troy, N. Y.
Lunkenheimer Co., Cincinnati, O.
Simmons, John, Co., New York City.
Vorhees Rubber Mfg. Co., Jersey City, N. J.
Wolf, Fred, W., & Co., Chicago, Ill.
Wood, R. D., & Co., Philadelphia, Pa.
Veneer.
Burton Veneer Co., Montgomery, Ala.
Veneer Machines.
Coe Mfg. Co., The Painesville, O.
Titus, E. E., Petersburg, Va.
Ventilators.
Downman-Dorrier Mfg. Co., Atlanta, Ga.
Merchant & Co., Inc., Philadelphia, Pa.
Wulff, W. C., & Co., Louisville, Ky.
Vices.
Reed Mfg. Co., Erie, Pa.
Wagon Builders' Mch. & Supplies.
Cordeman, Meyer, Co., Cincinnati, O.
Fay, J. A., & Egan Co., Cincinnati, O.
Washers. (Ore and Phosphate.)
Bailey-Lobby Co., The Charleston, S. C.
Cameron & Barkley Co., Charleston, S. C.
McLanahan-Stone Co., Hollidaysburg, Pa.
Warehouse. (Fidelity.)
Baltimore Fidelity Warehouse Co., Baltimore, Md.
Watchman's Clocks.
Electrical Material Co., Baltimore, Md.
Imhauser & Co., E., New York City.
Nanz & Co., New York, N. Y.
Waggoner Watchman Clock Co., Grand Rapids, Mich.
Water Power.
Roanoke Navigation & Water Power Co., Weldon, N. C.
Waterproof Cellar Engineer.
Gilbreth, Frank B., Boston, Mass.
Water-Wheel Governor.
Reologie Governor Works, Akron, O.
Water Softening Apparatus. (Purifying.)
Schiff, W. B., & Sons Co., Pittsburgh, Pa.
Water-Wheels and Turbines.
Davis Foundry & Machine Works, Rome, Ga.
Lane Mfg. Co., Montpelier, Vt.
Lefell, James, & Co., Springfield, O.
Munson Bros. Co., Utica, N. Y.
Morrish, Burnham Co., Inc., Glen Rock, Pa.
Ridson-Alcott Turbine Co., Mount Holly, N. J.
Smith Co., S. Morgan, York, Pa.
Stillwell-Bierce & Smith-Valle Co., Dayton, O.
Westinghouse, Church, Kerr & Co., Pittsburgh, Pa.
Westinghouse Mch. Co., Pittsburgh, Pa.
Wolf Co., Chambersburg, Pa.
Water Meters.
Pittsburg Meter Co., E. Pittsburgh, Pa.
Worthington, Henry R., New York, N. Y.
Water-Works Supplies.
Glamorgan Pipe & Foundry Co., Lynchburg, Va.
Pomona Terra Cotta Co., Pomona, N. C.
Stevens, H., Sons, Co., Macon, Ga.
U. S. Cast Iron Pipe & Foundry Co., Chicago, Ill.
Wood, R. D., & Co., Philadelphia, Pa.
Weighing Machinery. (Automatic.)
Richardson Scale Co., New York, N. Y.
Well Contractors. (Oil, Artesian, etc.)
Andrews, Perry & Bro., Atlanta, Ga.
Bacon Air Lift Co., New York, N. Y.
Cook Well Co., St. Louis, Mo.
Ford, Isaac H., New York, N. Y.
Hughes Specialty Well Drilling Co., Charleston, S. C.
Hudges Specialty Well Drilling Co., Charleston, S. C.
Kelly & Taneyhill Co., Waterloo, Ia.
Williams Bros., Ithaca, N. Y.
Wheelbarrows and Trucks.
Jackson Mfg. Co., Harrisburg, Pa.
Kilbourne & Jacobs Mfg. Co., Columbus, O.
Whistles. (Chimes, Sirens, etc.)
Amer. Stm. Gauge & Valve Mfg. Co., Jam. Plain, Mass.
Crosby Steam Gauge & Valve Co., Boston, Mass.
Lunkenheimer Co., Cincinnati, O.
White Lead.
French, Samuel H., & Co., Philadelphia, Pa.
Windlasses. (STEAM, ELECTRIC & HAND.)
American Ship Windlass Co., Providence, R. I.
Windmills.
Flint & Walling Mfg. Co., Kendallville, Ind.
Window Frames. (FIREPROOF.)
Wulff, W. C., & Co., Louisville, Ky.
Window Guards. (Wire.) [See Wire Goods.]
Wire. (Barbed Wire, etc.)
Broderick & Bascom Rope Co., St. Louis, Mo.
Ludlow-Saylor Wire Co., The St. Louis, Mo.
Roebbling's, J. A., Sons Co., Trenton, N. J.
Wire Cloth. (Iron, Steel, Brass, etc.)
Buffalo Wire Works Co., Buffalo, N. Y.
Caldwell, H. W., & Sons Co., Chicago, Ill.
Meyers, Fred, J., Mfg. Co., Hamilton, O.
New Jersey Wire Cloth Co., Trenton, N. J.
Wire Goods.
Boiles Iron & Wire Works, J. E., Detroit, Mich.
Buffalo Wire Works Co., Buffalo, N. Y.
Dufur & Co., Baltimore, Md.
Eureka Supply Co., Chattanooga, Tenn.
Ludlow-Saylor Wire Co., The St. Louis, Mo.
Meyers Mfg. Co., The Fred J., Hamilton, O.
New Jersey Wire Cloth Co., Trenton, N. J.
Wire Netting.
Buffalo Wire Works Co., Buffalo, N. Y.
New Jersey Wire Cloth Co., Trenton, N. J.
Wire Rope.
Broderick & Bascom Rope Co., St. Louis, Mo.
Contractors Plant Mfg. Co., Buffalo, N. Y.
Hazard Mfg. Co., Wilkes Barre, Pa.
Lidgerwood Mfg. Co., New York, N. Y.
Roebbling's, John A., Sons Co., Trenton, N. J.
Trenton Iron Co., Trenton, N. J.
Wire Rope Filler.
Broderick & Bascom Rope Co., St. Louis, Mo.
Ironides Co., Columbus, O.
Wire Rope Shields.
Ironides Co., Columbus, O.
Wire Rope Thimbles.
Broderick & Bascom Rope Co., St. Louis, Mo.
Jackson Mfg. Co., Harrisburg, Pa.
Woodworking Machinery. (Pneumatic.)
Rand Drill Co., New York, N. Y.
Woodsplitting Machines.
Fay, J. A., & Egan Co., Cincinnati, O.
Woodworking Machinery.
Chattanooga Machinery Co., Chattanooga, Tenn.
Coe Mfg. Co., The Painesville, O.
De Leach Mill Mfg. Co., Atlanta, Ga.
Fay, J. A., & Egan Co., Cincinnati, O.
Gibbs, W. H., & Co., Columbia, S. C.
Hermance Mch. Co., Williamsport, Pa.
Hutner Bros., Rochester, N. Y.
Lane Mfg. Co., Montpelier, Vt.
Miller Oil & Supply Co., Indianapolis, Ind.
Moshannon Mfg. Co., Phillipsburg, Pa.
Ober Mfg. Co., Chagrin Falls, O.
Root, B. M., York, Pa.
Shimer, Samuel J., & Sons, Milton, Pa.
Smith-Courtney Co., Richmond, Va.
Smith, H. B., Machine Co., Smithville, N. J.
Stratton & Bragg Co., Petersburg, Va.
Walke, Henry, Co., Norfolk, Va.
Whitney, B. D., & Son, Winchendon, Mass.
Zinc.
Merchant & Co., Inc., Philadelphia, Pa.
New Jersey Zinc Co., New York, N. Y.



Horizontal and Vertical, Simple and Compound

Engines

of superior quality for electric light and power.

The Ball Engine Co., Erie, Penn.

ATLAS

Engines and Boilers

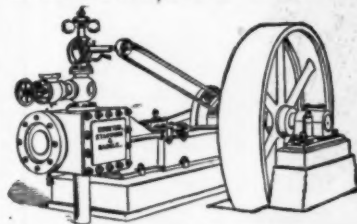
Simple, Strong, Durable and Economical.

Standard Types and Sizes.

Atlas Engine Works.
Indianapolis.

Dept. M.

America's Standard Slide Valve Engine.



BUILT BY
THE HOUSTON, STANWOOD & GAMBLE CO.
Cincinnati, O.

BOILERS AND ENGINES.

Tanks, Stacks, Stand Pipes and Sheet Iron Work; Shafting, Pulleys, Gearing, Boxes, Hangers, etc. Mill Castings.
#2 Cast every day; work 150 hands.

Lombard Iron Works & Supply Co.
AUGUSTA, GEORGIA.

Gas and Gasoline Engines

COLUMBUS

Send for CATALOGUE G. COLUMBUS MACHINE CO. Columbus, Ohio.

"LITTLE GIANT" STEAM OUTFITS

will make you happy. Sizes 1 1/2 to 10 h. p. In use several years. Simple, durable and powerful. Send for circular and price list.

BALTIMORE ENGINE CO.
227 1/2 N. Calvert St., Baltimore.

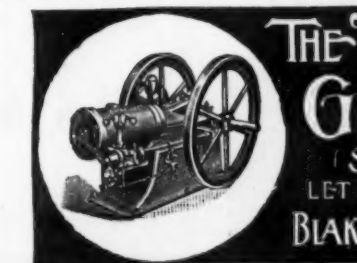
Gas and Gasoline Engines for Marine Use.

The Globe Marine Engine is made by us in Horsepowers from 1 up.

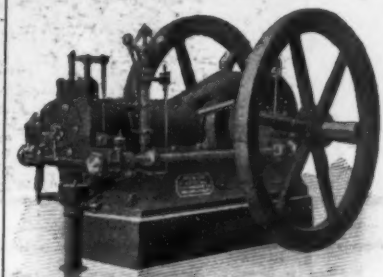
We want to build your Standard or Special Machinery.

Pennsylvania Iron Works Co.

50th St. and Lancaster Ave., Philadelphia.
New York, 136 Liberty St.



THE "BLAKESLEE" AND ENGINE
STANDS SUPREME
LET US TELL YOU WHY
BLAKESLEE MFG. CO. BIRMINGHAM



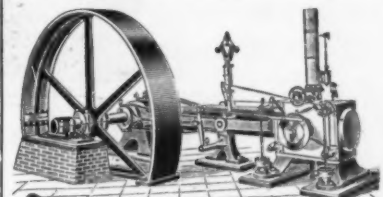
We have the most complete, closely regulated, efficient, durable and economical engine that experience, good workmanship, time, money and the correct principle can furnish. The working parts are few, but the right kind and in the right place. Our catalogue No. 17 will tell you all about it.

WRITE US.

Capital Gas Engine Company,

Pike and Hovey Sts.

INDIANAPOLIS, IND.



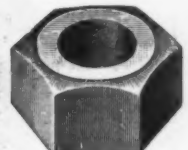
Corliss, Slide Valve & Hoisting Engines,
BOILERS OF ALL STYLES AND SIZES.

THE MURRAY IRON WORKS CO.

BURLINGTON, IOWA.

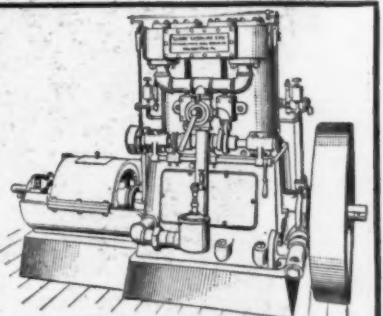
Incorporated February 1, 1870.

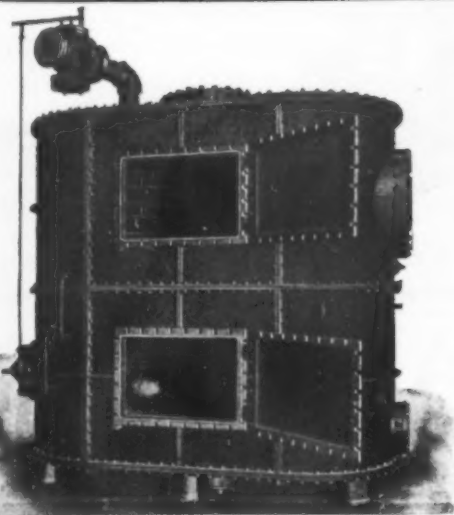
Cold Punched Nuts!



We want your trade in Cold Punched Nuts—Plain, Chamfered, Trimmed and Reamed, Finished and Semi-Finished. They are made of Double Refined Bar Iron, true to size and well finished. It will pay you to get our prices.

The Milton Mfg. Co., Milton, Pa.





Stilwell's Feed-Water Heater.

This appliance is productive of the greatest possible economy in a steam plant. By its use you can heat six pounds of cold water with one pound of exhaust steam from an initial temperature of say 50° F. right up to the boiling point (or more than nine pounds from 100° F.), and for every 10° thus gained you will save 1% of all the coal used under your boilers; that is, taking water at 50° the saving will be at least 16%, and more likely 19%.

THE STILWELL HEATER

has other advantages—water economy, improved quality of feed supply, increased steaming capacity, decreased wear and tear on boilers, etc.

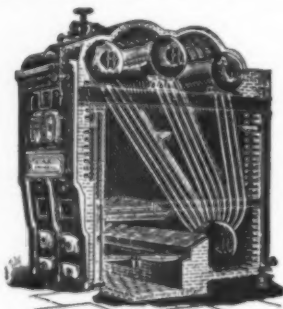
For further information, address

THE STILWELL-BIERCE & SMITH-VAILE CO.

M-40-403 to 425 Keowee St., DAYTON, OHIO, U. S. A.

THE STIRLING BOILER

Four manhole plates, all of which can be removed in a few minutes, give access to the entire interior, and expose every tube, rivet and joint in the boiler.

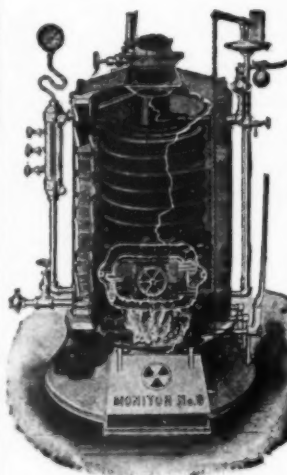


Its design is the acme of simplicity, and is mechanically perfect. Every pressure part is circular or spherical in form, and is made of wrought metal. *Not one ounce of cast iron or cast steel.*

THE STIRLING COMPANY,

General Offices, Pullman Building,
CHICAGO.

ATLANTA,
Empire Building.



ONCE IN FOUR MONTHS

is often enough to clean the soot from

MONITOR STEAM AND HOT WATER BOILERS

if you use soft coal; with hard coal, practically no cleaning is required.

**MONITOR STEAM GENERATOR
MANUFACTURING CO.**

Office and Salesroom:
Brewers' Exchange Bld., Fayette and Liberty Sts.
BALTIMORE, MD.

U. J. BOSSLER, Home Office and Works, LANDISVILLE, PA.

SOLD ON ITS MERITS.

The Cookson Combination Feed Water Heater, Purifier, Filter and Oil Separator.

Maintains constant temperature of the feed water of 206° to 212°.

Heats more water with less steam than any other.

Thoroughly Purifies and Filters the water, passing it to your boilers Pure and Boiling Hot.

The only Heater made separating the oil from the exhaust steam on entering the heater from either exhaust opening; one an oil separator and the other a steam separator, and operating by the steam passing through it in either direction.

Large Filtering Capacity—twice that of the ordinary Heater.

Special Designed Lime Catching Pans. Abundant lime catching surface.

Heater constructed of Best Materials throughout. Finest grade Fittings.

Heaters of all sizes from 50 to 10,000 H. P.

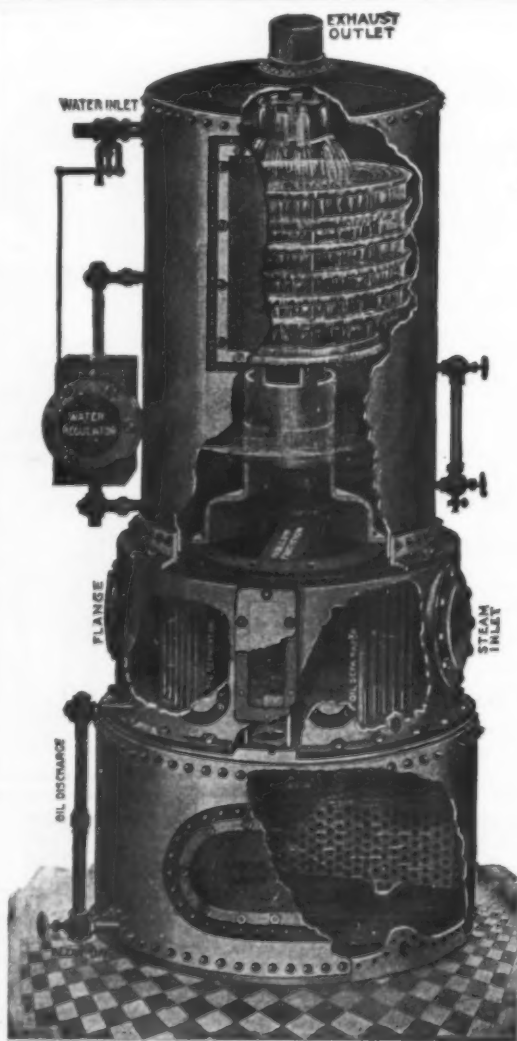
Built in four styles, A, B, C, and D.

You will get "value received" for every dollar invested in a "Cookson," besides having the best Heater, Purifier, Filter and Oil Separator that can be devised.

If you have exceptionally bad water to contend with, write us.

Our Heater Expert will give you the benefit of his experience.

Send for Complete Illustrated Catalog.



BATES MACHINE CO., Joliet, Ill., U. S. A.

SOLE MANUFACTURERS.

LUDWIG & CO., Agents, Atlanta, Ga.

SMITH-COURTNEY CO., Agents, Richmond, Va.

THE BABCOCK & WILCOX Co.

85 LIBERTY ST.
NEW YORK
CABLE ADDRESS
NEW YORK
"GLOBE BOXES"
ALL FOREIGN OFFICES
"BABCOCK"

STEAM

WATER TUBE BOILERS

SEND FOR OUR BOOK "STEAM"

BOSTON
85 FEDERAL ST.
PHILADELPHIA
NORTH AMERICAN BLDG.
SAN FRANCISCO
36 FIRST ST.

BRANCH OFFICES
CHICAGO
109 MARQUETTE BLDG.
NEW ORLEANS
315 CANON BLDG.
ST. LOUIS
117 N. 3RD ST.

ATLANTA, GA.
517 EQUITABLE BLDG.
MEXICO CITY
7 AVENIDA JUAREZ
HAVANA, CUBA
CALLE DE LA BAYANA

AMERICAN THOMPSON IMPROVED INDICATOR,



With Electrical Attachment and Ideal Reducing Wheel.

HIGHEST AWARD at Paris Exposition, 1900. The only American Indicator to receive a medal. The gold medal awarded at Pan-American Exposition on Gauges, Pop Valves, Indicators and Engineering Specialties.

We Make GAUGES THAT GAUGE. POPS THAT POP.

THE INDICATORS THAT MADE INDICATORS FAMOUS.

AMERICAN STEAM GAUGE & VALVE MFG. CO.

Address Factory, Jamaica Plain,
New York Boston, Mass. Chicago.

IMPROVED BERRYMAN Water Tube



FEED WATER HEATER AND PURIFIER.

Its PERFECT CIRCULATION of the water gives the highest degree of heat obtainable with the use of exhaust steam.

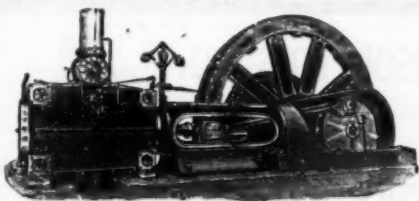
Provided with N SHAPED SEAMLESS DRAWN BRASS TUBES and so constructed that it CANNOT LEAK under the highest boiler pressure it is possible to carry.

Built compactly and designed with special reference to meeting the requirements of modern plants, and give continuous efficient service under the most severe conditions.

We also make special heaters for all purposes, for heating oils, acids and other liquids. If you need anything out of the ordinary, our experience is at your command.

BENJ. F. KELLEY & SON, Manufacturers, 91 Liberty St., N. Y. Works, Brooklyn, N. Y.

THE HOOVEN, OWENS, RENTSCHLER CO., HAMILTON, OHIO.



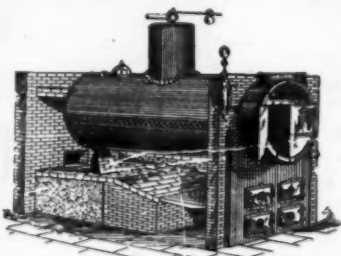
Hamilton Corliss Engines.

Engines for Rolling Mills, Electric Railways, Electric Light and Cotton Mills.

Engines of all Sizes and for all Purposes

1127 Marquette Bldg., Chicago.
39 and 41 Cortlandt St., New York.
Laclede Bldg., St. Louis, Mo.
403 Equitable Bldg., Atlanta, Ga.

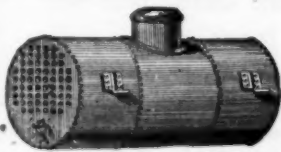
C. C. Moore & Co., San Francisco, Cal.



Engines, Boilers, Smoke Stacks, Tanks,

Injectors, Inspirators,
Saw Mill Machinery,
Shafting, Pulleys,
Hangers, Etc.

J. S. SCHOFIELD'S SONS CO., MACON, GA.



HARTLEY'S BOILER WORKS,
Boilers, Stand Pipes, Tanks,
Smoke Stacks, etc., etc. **MONTGOMERY, ALA.**

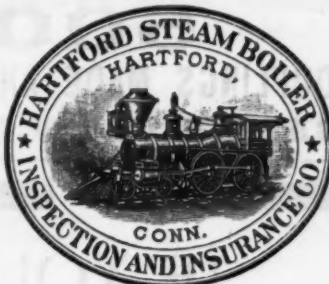


ALBANY GREASE
LUBRICATES EVERYTHING

Special Offer:

A sample can of grease and one ALBANY GREASE CUP free of charge or expense for testing.

MADE ONLY BY **ADAM COOK'S SONS,** 314 West Street, Branch, 31 S. Canal St., Chicago, Ill. New York City, U. S. A.



Thorough Inspections

And Insurance against Loss or Damage to Property, and Loss of Life and Injury to Persons caused by

Steam Boiler Explosions.

J. M. ALLEN, President.
W. B. FRANKLIN, Vice-President.
F. B. ALLEN, 2d Vice-President.
J. B. PIERCE, Secretary.
L. B. BRAINERD, Treasurer.
L. F. MIDDLEBROOK, Ass't Sec'y.



SMITH-COURTNEY CO.

Richmond, Va.

SOUTHERN AGENTS FOR THE

Improved Bates Corliss Engine

FROM 50 TO 1000 HORSE-POWER

THE ENGINE for Cotton Mills and Large Factories.
Also full line of Engines, Boilers, Iron and Woodworking Machinery and Pumps. Largest stock of Railroad, Mine and Mill Supplies in the South.

BOILERS

and COMPLETE POWER PLANTS,
TACKS, EXHAUST STEAM HEATING, etc

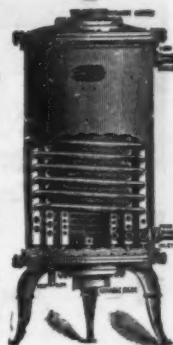
E. KEELER CO., Williamsport, Pa.

Send for Catalog R.

The National Feed Water Heaters

Save Fuel,
Save Money,
Save Time
AND
Save Your
Boilers

Delivering Water
to the Boiler at
212° F.



Full amount of heating
surface in every
heater.

We Manufacture
all kinds of

COILS

OF
Iron, Brass and
Copper Pipe.

Write for
Catalogue.

The National Pipe
Bending Co.

97 Lloyd Street,
New Haven, Conn.

Insure Your Steam Boilers

WITH THE

Maryland Casualty Co.

OF BALTIMORE.

Inspections made promptly, regularly and thoroughly by experienced men of proved ability.
Agents throughout the United States.

Surplus and Reserve for Policyholders
over \$2,250,000.00.

JOHN T. STONE, President.

THE SOUTHERN PIPE COVERING CO.

JOHN A. SELPH, Prop.

Successors to THE SOUTHERN ASBESTOS MFG. CO., RICHMOND, VA.
Manufacturers of Standard Asbestos-Magnesia Steam Pipe and Boiler Covering and Cements. The only manufacturers of these materials in the South.

TIGER

PIONEER

CROWN

APOLLO

MARINE

MIAMI

CHAMPION

Use Grease or Oil and Lunkenheimer Cups and you will have bearings lubricated to your entire satisfaction. Endorsed by millions of satisfied users. Specify them and order from your dealer. Write for catalog of Brass and Iron Engineering Appliances of superior quality.

THE LUNKENHEIMER CO., Cincinnati, O.

BRANCHES: NEW YORK: 26 Cortlandt Street.
LONDON: 35 Great Dover Street, S. E.

GEM

JEWEL

SENTINEL

SHAFTING

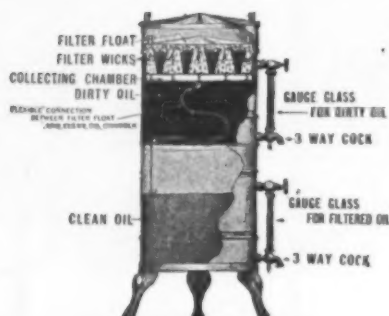
ROYAL

IDEAL

REX

500,000

DART PATENT UNION COUPLINGS MADE AND SOLD DURING THE PAST TWELVE MONTHS.
THE FAIRBANKS CO., N. Y. and Branches, Sales Agents.



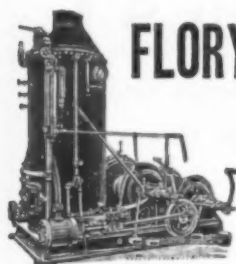
CAPILAR OIL FILTER

IF YOU USE OIL YOU NEED OUR FILTER.

Our CAPILAR OIL FILTER is based upon the principle of capillary action, the oil passing upward through a series of wicks, leaving the foreign matter behind. It is impossible for dirt to pass the wicks. About 90 per cent. of the oil used on your machinery is recoverable, and as a filter is requisite to the frugal operation of your plant, why not use the best—THE CAPILAR?

Write for Booklet J4.

The Capilar Co., 136 South Fourth St., Philadelphia.



FLORY Hoisting Engines

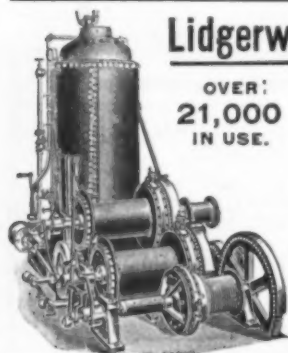
Specially adapted for Contractors, Pile Driving
 Quarry and Mine Duty.

Cableways and Conveying Machinery
 a specialty.

Slate Mining and Working Machinery—
 a complete line.

S. FLORY MFG. CO.,

Bangor, Pa



Lidgerwood HOISTING ENGINES

OVER:
 21,000
 IN USE.

Are STANDARD for Building Purposes,
 Pile Driving, Excavating, etc.

CABLEWAYS,

HOISTING and CONVEYING DEVICES, for
 Mining, Quarrying, Steam Logging.

SEND FOR CATALOGUES.

Lidgerwood Mfg. Co.

96 LIBERTY ST., NEW YORK.

Chicago, Atlanta, Cleveland, Boston, Philadelphia, New Orleans, Portland, Ore, Pittsburgh.

The LUDLOW VALVE MFG. CO.

TROY, N. Y., U. S. A.

Manufacturers of Fire Hydrants and Slide Gate Valves of
 All Sizes and for all Pressures and Purposes.

LUDLOW GOODS ARE RELIABLE.

SPECIFY AND INSIST UPON HAVING THEM.

None are Genuine without Our Name, which appears on
 every Valve and Hydrant we make and means

STANDARD OF MERIT.

Valves for Extreme High-Pressure Steam, Water, Gas, Oil, Ammonia, etc.,
 a Specialty.

SEND FOR CATALOGUE.



The Hayward Excavating Dredging Bucket, "Orange Peel" and "Clam Shell" Buckets.



Dredges, Excavators, Traveling Derricks, Railroad
 Excavators, Derrick Fixtures.

APPLIANCES FOR HANDLING COAL AND ALL MATERIALS.
 Send for New Illustrated Catalogue.

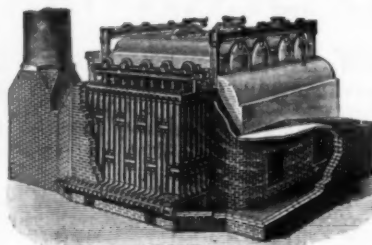
The Hayward Company,

97 Cedar Street,

New York.

Worrying over current expenses unnecessary when a

Green's Economizer



is in the boiler room. Using
 waste gases entirely, it keeps
 the feed-water heated above
 the boiling point. What that
 means in boiler repair saving
 can possibly be best learned
 from the engineer. Saves in
 coal 10 to 20 per cent. Other
 savings explained in our free
 booklet.

The Green Fuel Economizer Co., Matteawan, N. Y.

SOLE MANUFACTURERS IN THE U. S. A.

RAWSON & MORRISON MFG. CO.

CAMBRIDGEPORT, BOSTON, MASS.

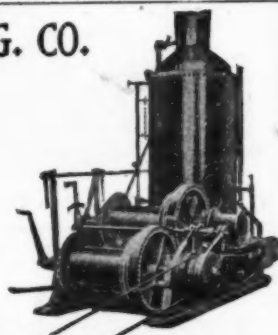
Standard and Eastern

HOISTING ENGINES,

CABLEWAYS and AUTOMATIC COAL
 HANDLING MACHINERY.

NEW YORK OFFICE,
 No. 11 Broadway.
 BALTIMORE,
 707 Maryland Trust Bldg.

CHICAGO,
 48-50 Lake St.
 MONTREAL, CAN.
 WRITE FOR CATALOGUE C.



THE JOHN F. BYERS MACHINE CO.

RAVENNA, OHIO.

Manufacturers of

Hoisting Engines, Locomotives,
 Derrick Cars, Derrick
 Irons, Etc.

Write for Catalogue "G."



S. MILNOR PRICE, Pres. V. BACIGALUPO, Vice-Pres. WALTER L. GRAHAM, Secy.

S. M. PRICE MACHINERY CO., Inc.
 NORFOLK, VA.

—SELLING AGENTS—

ERIE CITY IRON WORKS, Engines and Boilers.
 AMERICAN TOOL WORKS CO., Lathes, Planers, Shapers, Radial Drills, Boring Mills and
 Vertical Drills.
 LAIDLAW-DUNN-GORDON CO., Steam Pumps, Air Compressors and Condensers.
 MIDDLETOWN MACHINE CO., Gas and Gasoline Engines.
 DODGE MFG. CO., Wood and Iron Pulleys, Hangers, Shafting, etc.
 LAMBERT HOISTING ENGINE CO., Hoisting and Log Skidding Machinery.
 DETROIT OAK BELTING CO., Pure Oak Laced Belt.
 LUNKENHEIMER CO., High-Grade Steam Specialties.

Our Garfield Ejector

Is Strikingly Simple,

as can be seen by referring to the longitudinal section here illustrated. Its simplicity, in addition to its efficiency, durability and quality of material and workmanship, has made it a favorite among steam users.

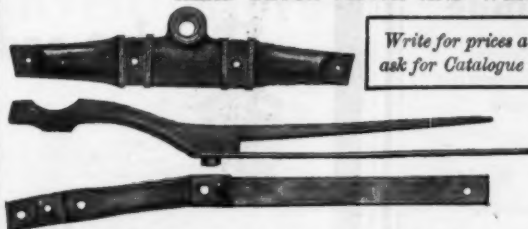
It is unequalled for raising water from deep wells, mines and pits; for filling or emptying tanks, and for raising and transferring liquids, hot or cold, in tanneries, dye-houses, etc. Send for catalogue and printed matter.

THE OHIO INJECTOR CO.
Wadsworth, Ohio.

1—Steam Jet.
2—Forcing and Lifting Tube.

Rear King Bolt Brewster Gear Set No. 6½ A.

HEAD BLOCK PLATE AND WILCOX DETACHABLE PERCH CONNECTIONS.



Write for prices and ask for Catalogue F.

The D. Wilcox Manufacturing Co.
MECHANICSBURG, PA.

Manufacturers of
Carriage Hardware and Special Forgings.

Patented. Wilcox Forged Detachable Head Block Plates.

Texas Petroleum

The most economical fuel for Furnace and Mill Work, Forging and Rivet Furnaces, Puddling and Annealing Furnaces, Reheating Furnaces of all kinds. Prompt shipments made from New York, Philadelphia, New Orleans, Tampa or Port Arthur, Texas.

Correspondence Solicited.

Gulf Refining Co., Refiners

General Office: 814 Frick Building, Pittsburg, Pa.

Contractor's Plant Mfg. Co., Ltd.

MANUFACTURERS OF

STEAM, HORSE and HAND POWER

Hoisting Machines

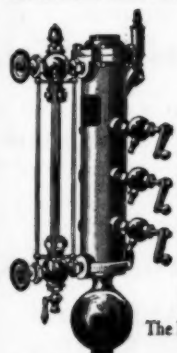
DERRICK IRON and CONTRACTORS' SUPPLIES.

MANUFACTURERS OF WIRE ROPE.

129 Erie Street, Buffalo, N. Y.

Mention this Journal.

RELIANCE



Safety Water Columns

Save Fuel, Repairs, Stoppages. ECONOMY. SAFETY.

We urge our patrons to see that the name "Reliance" is cast on all columns. No other person or corporation is authorized to manufacture Reliance Steam Specialties.

The Reliance Gauge Column Co.

SOLE MFRS.
CLEVELAND, O.

79 E. Prospect St.

Mill and Machinery Supplies

Get Prices from

Cotton States Belting & Supply Co.

Main Store—ATLANTA, GA.
Branch—SAVANNAH, GA.

McCLAVE'S

Improved GRATE and ARGAND STEAM BLOWER. These appliances combine valuable features for burning the smaller sizes of hard and soft coal, such as Anthracite Culm, Birdseye, Buckwheat and Bituminous Slack, while the Grate alone stands unequalled for burning the larger sizes of these fuels with natural draught. The Argand Blower gives EXCELLENT RESULTS in burning Spent Tan, Sawdust, Bagasse, etc. For full For Boiler and particulars send for Illustrated other furnaces. Descriptive Catalogue C.

McCLAVE-BROOKS CO., Scranton, Pa.

STEEL PLATE CONSTRUCTION.

The Girard Boiler & Mfg. Co. GIRARD, OHIO.

Blast Furnaces, Stacks, Tanks, Riveted Pipe, Stand Pipes, Galvanizing Kettles, Ladles, Girders, Structural Work, etc. Write us.

ENGINES, BOILERS, SAW MILLS, GINNING MACHINERY

And Kindred Lines Generally.

W. H. GIBBES & CO.
COLUMBIA, S. C.

The Detroit Sight Feed Lubricators

not only give better service than other makes, but they last longer and require less repairs. They are of superior design, are extra strong and heavy, and each lubricator is tested at 300 pounds pressure to the square inch before it leaves the factory. Catalogue on application.

DETROIT LUBRICATOR CO., Detroit, Mich.



The I. & E. Greenwald Co.

Engineers, Founders, Machinists and Millwrights.

Steam Engines

Shafting, Hangers, Pulleys, Sprocket Wheels, Chains, Etc. Headquarters for Mill Gearing of All Kinds and Sizes. Steam Power Plants Complete.

Write for Catalogue.

720 E. Pearl St., CINCINNATI, O.



The Continuous Service Foot Valve

is provided with two sets of cylindrical side screens, one within the other, and so arranged that the outer one can be raised to or above the surface of the water to have refuse removed therefrom. The inner screen is cleaned by the outer one scraping down over it. Do you want to hear more about this valve? Write for Circular.

The NEWMAN MFG. CO.

26 Cortlandt Street, NEW YORK.



Pat. May, 1899.

John Simmons & Co.



104-110 Centre Street,
New York City.



IRON PIPE FITTINGS AND VALVES

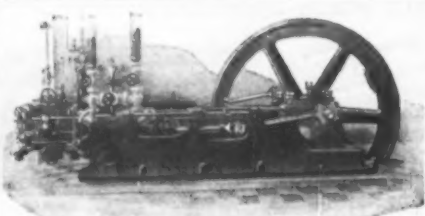
—FOR—

STEAM, GAS, OIL, WATER

AND ELECTRICAL ENGINEERING.

PIPE CUTTING AND MACHINE SHOPS
FOUNDRY

BENDING, COIL AND BLACKSMITH SHOPS.



5000 IN OPERATION.

The Linde

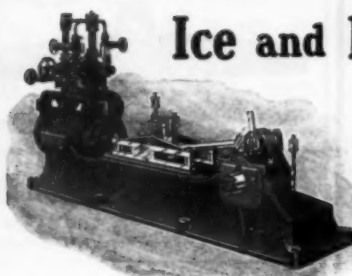
Designed to meet all requirements where high grade

Ice and Refrigerating Machinery

is desired. Drop us a postal for literature.

**The Fred W. Wolf Co.
CHICAGO.**

Atlanta, Townsend Bldg., New York, Ft. Worth.

**Ice and Refrigeration**

For the cheap production of ice and for reliable refrigeration you can make no mistake by installing a BARBER plant. We make all of our installations in the most careful and conscientious manner and furnish the strongest kind of guarantee. Write us for catalogue and list of users. While we have devoted special attention to small plants our larger ones are among the finest in the country.

CREAMERY PACKAGE MFG. CO.

Successor to A. H. BARBER MFG. CO.

REFRIGERATING MACHINE DEPT., 1142-1158 W. 16th St., CHICAGO, ILL.

**COOLING TOWERS.**Furnished With Fans or Chimneys.
(NATURAL DRAFT.)**George J. Stocker,**

Patentee and Manufacturer,

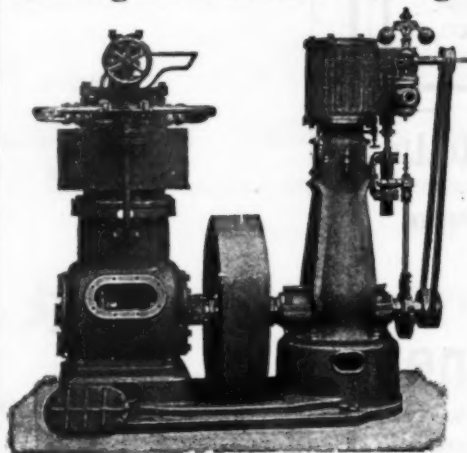
2833 S. Kingshighway Boulevard,
ST. LOUIS, MO.

WRITE FOR CATALOGUE. (Illustrated.)

Southern Representatives:

LUDWIG & CO., Engineers,
513 EMPIRE BLDG., ATLANTA, GA.**"SOLVAY" CHLORIDE OF CALCIUM
SOLID AND FLUID.**

The Best Dryer for Air in Cold Storage Houses.
Makes the Strongest Ice Machine Brine for the Least Money.
Send for Calcium Circular and Prices.

CARBONDALE CHEMICAL CO.,New York Office, 141 Broadway.
Boston Office, 544 Tremont Bldg.**Carbondale, Pa.**Pittsburg, 727 Park Building.
Chicago, 61 Portland Bldg.**Remington Ice and Refrigerating Machines**COMPLETE PLANTS
INSTALLED AND
GUARANTEED : : :ICE MAKING—
CAN OR PLATE SYSTEMREFRIGERATION—
DIRECT EXPANSION
OR BRINE SYSTEM

The REMINGTON Ice Machine is the
STANDARD Machine of small capacity.
Beware of IMITATIONS, buy
the ORIGINAL, it is the best.

Manufactured only by

Remington Machine Co.

Wilmington, Del.



HENRY B. NEWHALL.

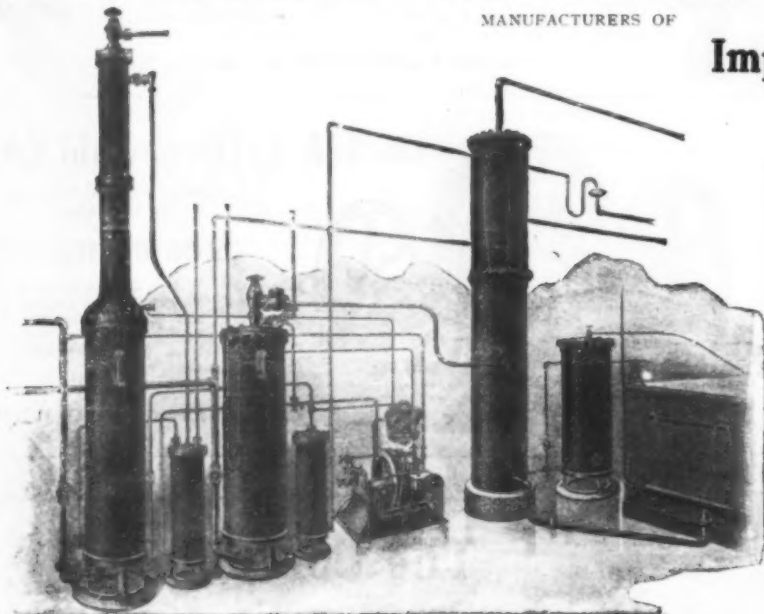
Only two parts. Used with regular lag screws of any length.
DIAMOND EXPANSION BOLT
for fastening all kinds of ornamental iron work, rollings, fire escapes, electrical work, &c., to brick, stone or any kind of masonry.
9-15 Murray St., NEW YORK.

Columbus Iron Works Company,

MANUFACTURERS OF

**Improved Absorption
Ice Machines.**Ice Machine Repairs and Parts
of all Kinds.From Five Ton Daily
Capacity Up.

All coils made from strictly
extra heavy wrought iron pipe.
Ammonia valves, flanges and
fittings. Duplex fly wheel ammonia pumps. Estimates furnished upon application.

**COLUMBUS IRON WORKS COMPANY, COLUMBUS, GA.****JOHN H. MURPHY,
New Orleans Boiler Works.**High Grade Boilers, all
Types, Built to Order.

633-43 Magazine St., NEW ORLEANS.

MURRAY W. ELER, Pres.
J. R. LITTLE, Sec. and Treas.**Alabama Iron Works,
MILL, STEAMSHIP and
LOCOMOTIVE REPAIRS**Iron and Brass Castings. Light and
Heavy Forgings. All Kinds of
Machinery Supplies.152, 154, 156 and 158 S. Commerce St.,
MOBILE, ALA.**Frick Company,**

Waynesboro, Pa.

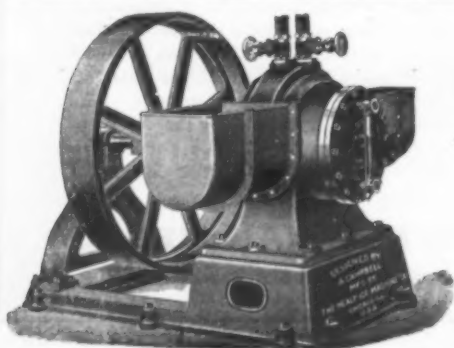
New York Office, 39-41 Cortlandt St.

**ICE MAKING AND
REFRIGERATING
MACHINES.**

Corliss Engines.

Condensing, Non-Condensing
and Compound.Steam Boilers, Traction and Portable
Engines, Saw Mills, &c.

Catalogue on application.

**Our Improved
Compression Ice AND
Refrigerating Machines**

Results Guaranteed.

are Economical and Simple in Operation, built from 1 ton
up to 100 tons capacity.

"Single and Double Acting."

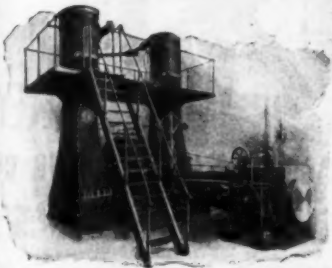
The machines now in operation prove it to be the most
successful machine on the market. Write for information.

Healy Ice Machine Company.

Chicago, Ill.

Ice Machine Investigators

Are the York Company's best friends.



The more careful the examination of our machinery the more enthusiastic is its endorsement.

York Machinery

is the most efficient, economical and durable Ice Making Machinery on the market.

York Ammonia Fittings are always kept in stock, and are made to order for any style of plant.

Send for Catalogue No. 4.

YORK MANUFACTURING CO., YORK, PA.

MANUFACTURERS OF

Ice Making and Refrigerating Machinery and Ammonia Fittings.

"STERLING"

ICE and REFRIGERATING MACHINERY

Built for any capacity— $\frac{1}{4}$ Ton upwards.

Strongest Guarantee
as to

Efficiency
Economy
Durability

Complete Ice Making and Refrigerating Plants designed and installed.

Sterling Machines have special features that make them superior to all others in the most essential points.

Correspondence invited. Information cheerfully and promptly given.

THE UNITED IRON WORKS CO.

Capital Stock \$650,000.00

SPRINGFIELD, MO.

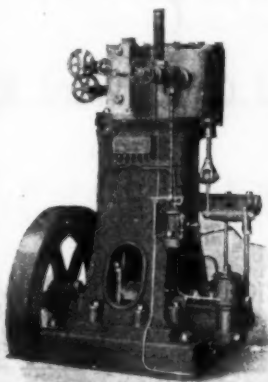


"STERLING" Double Acting Ammonia Compressor. Direct Connected or Belt Driven.

Missouri State Building at World's Fair will be cooled by a "Sterling." Largest building in the world cooled artificially for personal comfort.

No One Can Afford

to purchase an ammonia refrigerating machine when apparatus of the **ONLY SAFE SYSTEM**—using Carbonic Anhydride—made in America, of proved efficiency and

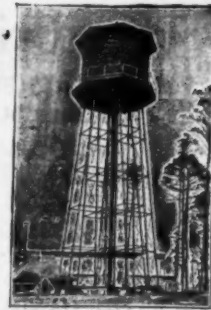


guaranteed by a strong company, can be had at moderate cost. An ammonia machine may drive away firemen and cause the destruction of your whole establishment, or taint everything with am-

monia odor which will last for months and force a general shut-down, but carbonic acid gas **HAS NO ODOR**. The illustration shows a six ton machine, one of many sizes which can be furnished as required. Catalogue is sent for the asking.

THE BROWN-COCHRAN COMPANY

15 GLOBE ST., - LORAIN, OHIO.



"Absolutely safe and reliable. Ask your friends."

The Money Saved

by the absence of repairs to

A CALDWELL TANK AND TOWER

will more than pay the original cost in a few years. The efficient fire protection furnished by these outfits is recognized by insurance companies and reduced rates are granted where

CALDWELL TANKS AND TOWERS

are in use. Why not investigate the merits of these outfits.

Send for our catalogue and price list.

W. E. Caldwell Co., Louisville, Ky.

According to the Eternal Fitness of Things,

Our machinery should be installed in your

Ice or Refrigerating Plant.

Special features outlined and explained upon request.

We want to be questioned.

THE VILTER MFG. CO.

132 Clinton Street,

Milwaukee, Wis.



WATER SUPPLY OUTFITS

For Manufacturing Plants, Railroads, Small Villages and Private Residences.

Galvanized Steel
"STAR" COLUMN TOWERS,
Any Height.

Galvanized Steel, Pine or Cypress
TANKS, any Capacity.

STAR WIND MILLS,
Galvanized Steel or Wood, adapted for farm, residences, power or irrigating purposes.

"HOOSIER" and "FAST MAIL"
IRON PUMPS.

WRITE FOR CATALOGUE.

Designs and Prices Furnished.



MUNICIPAL PLANT



SUBURBAN OUTFIT.

FLINT & WALLING MFG. CO., 516 Oak Street, KENDALVILLE, IND.

EASTERN OFFICE—96 Wall St., New York, N. Y.

OIL & WATER TANKS

OF ANY CAPACITY

BOILERS STACKS

PLATE & SHEET IRON WORK

THE PETROLEUM IRON WORKS CO.

MAIN OFFICE & WORKS
WASHINGTON PA.

BRANCH OFFICES
PITTSBURG, PA.
BEAUMONT, TEXAS
NEW ORLEANS, LA.

Steel Storage TANKS.

HAMMOND IRON WORKS,
WARREN, PA.

Correspondence Solicited.

Corrugated Galvanized Steel

TANKS

FOR FUEL OIL, PETROLEUM OIL WELLS, FACTORIES, ETC.

Also CISTERNS for under or overground use. Our work guaranteed. Write

HARRY BROS. CO. 240 Pacific Ave., DALLAS, TEX.
231 Fannin St., BEAUMONT, TEX.



TUPELO WATER TANKS

Equal to cypress and 30% cheaper.

For delivered prices write

Tupelo Tank Co., 97 Madison Street, Mobile, Ala.

OUR TANKS

ARE ALWAYS

~ON TOP~

HONESTLY MADE

WRITE FOR PRICES

THE CYPRESS LUMBER CO.
APALACHICOLA, FLA.



CYPRESS WATER TANKS.

Best in the world. Send for catalogue. Write for delivered prices.

H. F. LEWIS & CO., Ltd.
216 Baronne St. NEW ORLEANS, LA.

THE AMERICAN



All-Wrought Steel Split Pulley.

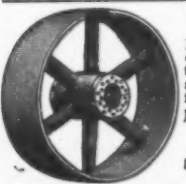
A HANDSOME DESIGN.
SUBSTANTIAL CONSTRUCTION.
A PERFECT PULLEY.

SEND FOR CATALOG.

THE AMERICAN PULLEY CO.

29th and Bristol Streets,

PHILADELPHIA, PA.



OILLESS BEARINGS.

Metallic Loose Pulley Bushes require no oil or other lubricants, either at the start or occasionally afterwards. Will run perfectly dry for years.

North American Metal Co.,
West Ave. Cor. W. 3rd St.,
Long Island City, N. Y.
Send for Loose Pulley Circular No. 6.



The "Original Gandy" BELTING.

STITCHED
COTTON DUCK

For Strength,
Traction
Power
and
Durability

It is without an equal.

Specially adapted to places where belts are exposed to water, heat, steam, oils, atmospheric changes, etc. Costs about one-half as much as the best leather belt on the market—has greater lasting qualities and will outwear any other make of belt. It is used with the greatest satisfaction as a main driver, conveyor or carrier. Give the Gandy Belt a trial and be convinced of its high merit. Beware of imitations. The real article stamped every ten feet,

"Original Gandy Belt."

Sole Manufacturers,

THE GANDY BELTING CO., Baltimore, Md.



PULLEYS, FRICTION CLUTCHES.

Every Appliance
FOR THE
Transmission of
Power.

The MINSTER MACHINE CO.
MINSTER, O.

Are you familiar with the

Chase Wood Rim Pulley?

Do You Use

Dynamo Pulleys, Counter Shaft Pulleys, Double Spinning Frame Pulleys, Binder Pulleys, Any Kind of Pulleys?

CHASE PULLEY CO., Providence, R. I.

Send for Booklet.

GOLDEN'S FOUNDRY & MACHINE CO.

COLUMBUS, GEORGIA.

Manufacturers of

Hangers, Shafting, Machine Moulded Pulleys.

Send for Price List and Discount Sheet.

Couplings, Pillow Blocks, Floor Stands, Collars, Etc.

T. B. WOOD'S SONS

CHAMBERSBURG, PA.

Manufacturers of

POWER TRANSMISSION APPLIANCES

Including

Rope Transmission.

Special attention paid to complete equipments of machinery for the transmission of power. Rope Drives designed and furnished to transmit any amount of power.

Send for Catalogue and Mention this paper.

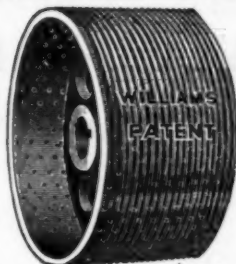


GILBERT WOOD SPLIT PULLEYS

SAGINAW MANUFACTURING CO.
Saginaw, Michigan, U. S. A.

New York Branch, - 44 Dey Street.
Chicago Branch, 35 S. Canal Street.
Sales Agencies in all the Principal Cities.
Cable Address: ENGRAVE, A B C & Lieber's Codes.

THE ONLY Pneumatic Pulley.



M. F. Williams Mfg. Co.
9th and Montgomery Sts.
ST. LOUIS, MO.



A HAPPY COMBINATION

of the best features of the
all steel and all wood pulleys make the new

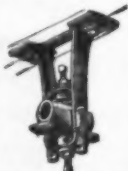
Steel Center Wood Rim Pulley.

Send for Prices.

Oneida Steel Pulley Co.
ONEIDA, N. Y.

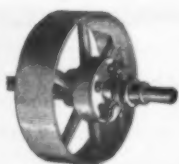
POWER TRANSMITTING MACHINERY.

Entire Contracts taken for the equipment of Mills and Factories with SHAFTING, HANGERS, PULLEYS, COUPLINGS, GEARING AND FRICTION CLUTCHES. Also the erection of same.



Poor design and Imperfect Construction in Transmission Machinery is a source of great loss in power and excessive operating cost. SEND FOR OUR CATALOGUE.

THE A. & F. BROWN CO., 25 Dey Street, NEW YORK. ENGINEERS, FOUNDERS and MACHINISTS.



Hose for Fire Protection.



LINEN HOSE unlined,
for inside use in mills.
**RUBBER & COTTON
HOSE** for outside use.

Our Hose is accepted by
the Underwriters, is made
of High Grade Material
throughout, and is al-
ways reliable in time of
need.

Write for our FIRE HOSE Catalogue.

MANUFACTURED BY

Boston Belting Co.,

MECHANICAL RUBBER GOODS

of Every Description.

BOSTON.

NEW YORK.

ATLANTA.

NEW ORLEANS.

James Bennett Forsyth,

Mfg. Agt. & Gen. Mgr.



Voorhees Rubber Mfg. Co.

JERSEY CITY, N. J.

Rubber Belting, Hose,

Packings, Valves, Mats, Mattings, Etc.

Rubber Lined Cotton Mill and Fire Hose.

We manufacture only the highest grades.

"Goods Bearing Our Brands Are Always
Guaranteed."

"OUR NAME AND BRAND A GUARANTEE OF QUALITY."

High Grade Rubber Goods,



Belting, Packing,
Tubing, Springs, Valves,
Gaskets,
Mats, and Matting.
Rubber Lined
Linen and Cotton Hose.

Send for Catalogue, Samples and Prices.

N. J. CAR SPRING and RUBBER CO.

MAIN OFFICE AND WORKS,
JERSEY CITY, N. J.

AGENTS:—Lee Bros., Memphis, Tenn.; Nashville Machine Works, Nashville, Tenn.; Moore
& Handley Hardware Co., Birmingham, Ala.; Southern Brass & Iron Co., Knoxville, Tenn.;
Stratton & Bragg Co., Petersburg, Va.; Southern Supply Co., Norfolk, Va.; N. S. Fulford Har-
ware Co., Washington, N. C.; Lombard Iron Works & Supply Co., Augusta, Ga.; John G.
Christopher, Jacksonville, Fla.; Peden Iron & Steel Co., Houston, Tex.; F. F. Collins Mfg. Co.,
San Antonio, Tex.; Young & Heintz, Dallas, Tex.; Richard Mellett, Mobile, Ala.; C. A. Turner,
Pittsburg, Pa.; Miller Supply Co., Huntington, W. Va.; Carolina Supply Co., Greenville, S. C.;
F. W. Axtell, Ft. Worth, Tex.; Little Rock Tent & Awning Co., Little Rock, Ark.; Hyman
Supply Co., New Bern, N. C.

Driving, Conveying, Elevating

EACH LEVIATHAN BELT.

IS MADE ON HONOR, AND STANDS FOR

Greatest Power, Durability, Economy

Wherever Run—Wet or Dry.

MAIN BELTING COMPANY,

1219-1241 Carpenter Street, Philadelphia.
BOSTON

NEW YORK

35-37 Market Street, Chicago.
BUFFALO

Eureka Fire Hose Co.



GOLD MEDAL
Awarded at
Pan American Exposition
1901.

13 Barclay St.
NEW YORK.

ORIGINAL MANUFACTURERS OF

SEAMLESS RUBBER LINED COTTON FIRE HOSE.

Also the Celebrated Brands of Eureka Mill Hose, Eureka
Underwriters' Linen, Eureka Garden Hose, Eureka
U. S. Brand Linen Hose, Plain and Rubber Linen, Trojan
Mill Hose, Gem Garden Hose.

Agencies at Charlotte, Greensboro, N. C., Atlanta, Ga.,
Memphis, Tenn., and New Orleans, La.

DID YOU EVER TRY

MEIER'S BELTING?

How do you know it is not
THE BEST?

Made of Oak-Tan Leather.

TRY IT.

JOSEPH MEIER'S SONS,

Factory: Newark, N. J. 49 Day Street, N. Y.

ESTABLISHED 1883.

"Camel" HAIR BELTING.

Rosendale-Reddaway Belting & Hose Co.
NEWARK, N. J.

ALEXANDER BROS. BEST OAK BELTING. PHILADELPHIA.

Cast Iron Whole Pulleys

Machine Moulded
Bored, Turned and Balanced.



We can furnish from stock pulleys from 6 to 120
inches in diameter, and can make larger sizes at
short notice. We can also furnish pulleys covered
with rubber belting or leather at lowest prices.
Pulleys are furnished with straight or crowning
faces as desired. Send for 100-page illustrated
catalogue and discount sheet.

W. E. CALDWELL CO.
Louisville, Ky.

COTTON-BLOOM

Sewed Canvas Belting

FOR IN OR OUTDOOR USE.

Equals Leather Belt. Half The Price.



Made by an entirely New and Original Process. Will not stretch any more than
leather and is equally as strong and durable; a trial will convince you.

SAMPLES AND SPECIAL DISCOUNTS ON APPLICATION.

ENDLESS BELTS A Specialty.

WHITEHURST BELTING CO., BALTIMORE, MD.

A Scientific Triumph.

A marvel in duck
and rubber.
Made straight
spiral and square
spiral



Will outwear
other Piston
Packings 2 to 1

If the packing you are using does not give satisfaction, send for Working Sample.

Manufactured Exclusively by

PEERLESS RUBBER MFG. CO.

16 Warren St., New York.

16-24 Woodward Ave., Detroit, Mich. Corner Common and Tchoupitoulas Sts., New Orleans, La.
210-214 N. Third St., St. Louis, Mo. 17-23 Beale St. and 18-24 Main St., San Francisco, Cal. 1221-1223
Union Ave., Kansas City, Mo. 709-711 Austin Ave., Waco, Tex. Cor. Ninth and Cary Sts., Rich-
mond, Va. 1212 Farnam St., Omaha, Neb. 202-210 S. Water St., Chicago, Ill. 634 Smithfield St.,
Pittsburg, Pa. 1601 to 1615 17th St., Denver, Col. 220 S. Fifth St., Philadelphia, Pa. 20th St. and Rail-
road Ave., Birmingham, Ala. 38 S. Meridian St., Indianapolis, Ind. 51-55 N. College St., Charlotte, N. C.

OLD DOMINION HORSE SHOES.

Cut Nails of Superior Quality of Iron and Steel.
Bolts, Refined Bar Iron.

GRANITE CRUSHED TO ORDER FOR CONCRETE PURPOSES.

OLD DOMINION IRON & NAIL WORKS CO.
RICHMOND, VA.

THE MEANS & FULTON IRON WORKS

OFFICE & WORKS 4TH ST. AND 8TH AVE. NORTH, BIRMINGHAM, ALA.
MANUFACTURERS AND BUILDERS OF BOILERS, TANKS, STEAM PIPES AND BLAST FURNACES,
AND WORKERS IN SHEET IRON AND STEEL. ESTIMATES FURNISHED ON STRUCTURAL WORK. BIRMINGHAM, ALA.

RO. PRESTON MEANS,
PRES.
JOHN H. MEANS,
VICE-PRES.
W. M. FULTON,
MANAGER

ADDRESS
BOX 363

W. K. NIVER COAL CO.

Miners and Shippers of the Celebrated

Pen Mar Big Vein Cumberland and Paint COALS.

Creek Kanawha Splint, Steam and Gas

Unexcelled for Steam and Smithing Purposes.

General Offices, Continental Trust Bldg., Baltimore, Md.

BRANCH OFFICES:

625 Marquette Bldg., CHICAGO.

1021 Union Trust Bldg., CINCINNATI, O.

101 Milk St., Boston, Mass.

200 E. Genesee St., Syracuse, N. Y.

Altoona, Pa.

Shipping Wharves: BALTIMORE, NEWPORT NEWS, PHILADELPHIA AND STATEN ISLAND.

Burroughs & Kramer, Durham, N. C.

Selling Agents for North and South Carolina.

Pocahontas Coal

SMOKELESS, SEMI-BITUMINOUS.

Is the Standard Steam Fuel for the World.

CASTNER, CURRAN & BULLITT, Sole Agents, PHILADELPHIA.

BRANCH OFFICES:

1 Broadway, New York.

70 Kilby Street, Boston, Mass.

Citizens Bank Bldg., Norfolk, Va.

Neave Building, Cincinnati, O.

Terry Building, Roanoke, Va.

Old Colony Building, Chicago, Ill.

4 Fenchurch Avenue, London, England.

DAVIS COAL AND COKE CO.

MINERS AND SHIPPERS

DAVIS LOCOMOTIVE, STEAM AND SMITHING COALS

Sole Agent for
Elk Garden**Big Vein Cumberland Coal.**DAVIS COKE FOR ORE SMELTERS, FOUNDRIES,
AND FAMILY USE.

Shipments to all points accessible to rail or water.

BALTIMORE. PHILADELPHIA. NEW YORK. BOSTON.

CHAINCommon Proof Coil. Close and Stud Link. Switch, Check and Safety.
"BB," "BBB" and Dredge. Brake and Special.**EMPIRE CHAIN COMPANY,**

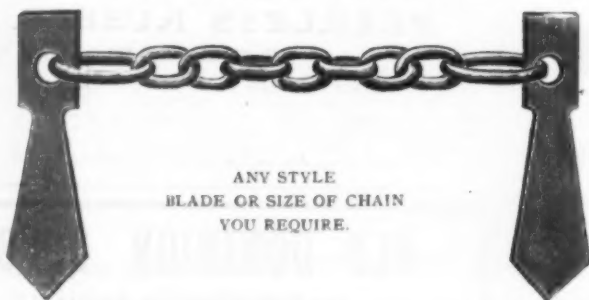
2929-2939 Smallman St.,

PITTSBURG, PA.

MANUFACTURERS.



CHILLCOTT EVANS CHAIN CO., Allegheny, Pa.

Crane Chains, Log Chains, Tow Chains
for River Navigation, Pole and Tongue
Chains, Railroad Switch Chains,
Wagon Lock Chains, Wagon Stay
Chains, Rafting Chains, Railroad Brake
Chains, Straight or Twist Link Bind
ing Chain, Close Link, Self-Colored.**GET YOUR CHAIN DOGS FROM US**WE MAKE
TRACE,
WAGON,
COIL.ANY STYLE
BLADE OR SIZE OF CHAIN
YOU REQUIRE.ALSO
SLAB
CONVEYOR
CHAIN.**THE INDIANA CHAIN WORKS, Jeffersonville, Ind.**

INCORPORATED
1884

KENSEE

STANDS FOR ALL THAT IS BEST IN BLUE-GEM AND JELICO COALS.

ADDRESS MAIN JELICO MT. COAL CO. KENSEE, KY.
(TELEGRAPH JELICO, TENN.)

ALABAMA CONSOLIDATED COAL & IRON CO.

BIRMINGHAM, ALA.

Manufacturers of the Celebrated Brands of

FOUNDRY IRON:

"Clifton" and "Etowah"Also Miners and Shippers of HIGH-GRADE STEAM
COAL, and Makers of the Well Known**"STANDARD" FOUNDRY COKE.**Selling Agents for the North
and West:**MATTHEW ADDY & CO.**CINCINNATI,
PITTSBURGH,CHICAGO,
NEW YORK.ST. LOUIS,
PHILADELPHIA,

MOBILE COAL CO., Agents for Coal and Coke in the Mobile Territory.

Jewett, Bigelow & Brooks,

MINERS AND SHIPPERS OF

Iroquois Splint

and Thin Vein

Pocahontas Coal

The Two Most Powerful Steam Coals Produced.

MAIN OFFICE, DETROIT, MICH.

Southern Office, Marytown, W. Va.

Eastern Office, Roanoke, Va.

HARTFELDER-GARBUTT CO.

Mill and Railroad Supplies, Machinery, Engines and Boilers.

301, 303, 305 West Bay St., Cor. Jefferson,

Agents for Revere Rubber Co., Chicago
Belting Co. and Ohio Valley Pulley Co.

SAVANNAH, GA.

A. C. Danner, Pres. J. C. Strong, Sec'y & Treas.
MOBILE COAL COMPANY,
COAL

AT WHOLESALE AND RETAIL.

CARGO & BUNKER COAL
furnished promptly.Main Office, 67 St. Francis St., **MOBILE, A.L.A.****THE SAFETY****Car Heating & Lighting Co.**

160 Broadway, New York.

CAR LIGHTING

By the Pinch System.

CAR HEATINGBy Steam Jacket System,
Hot Water Circulation,
Return and Direct Steam
Systems.**AUTOMATIC STEAM COUPLERS.**

FOR INFORMATION ABOUT

U. S. MAIL CHUTES,WHICH ARE
A NECESSITY IN OFFICE BUILDINGS AND HOTELS.
Write to the sole makers,
THE CUTLER MFG. CO., Rochester, N. Y.

PATENTED.

AUTHORIZED.

**SPRAGUE
CANNING MACHINERY
COMPANY**

45 RIVER ST. CHICAGO, ILL.



ALLIS ROLLER MILL.

ALLIS-CHALMERS Co.

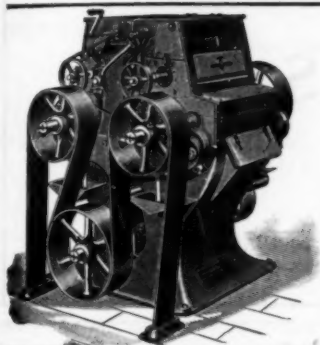
General Office **CHICAGO**, New York Life Bldg.

BUILDERS OF

Flour Mills, Corn and Cereal Mills.

Universal Bolters—Reliance Purifiers
Reliance Sifters—Allis Roller Mills

WRITE FOR DESCRIPTIVE CATALOGUE AND PRICES.



FLOUR MILL MACHINERY.

The kind that stands high in the estimation of millers everywhere. Its 51 years record is a good one. We build complete Flour, Corn and Cereal Mills of any desired capacity. We make Mill and Elevator Machinery and Supplies of all kinds, Portable Buhr Stone Mills, Roller, Corn and Feed Mills. Bolting Cloths made up to order.

HIGH-GRADE SHAFTING, POWER CONNECTIONS, GEARING and PRACTICAL ROPE DRIVES a Specialty.

CORRESPONDENCE SOLICITED.

NORDYKE & MARMON CO., 1133 West Morris St.
INDIANAPOLIS, IND., U. S. A.



*Power Transmitting, Elevating, Conveying, Flour, Corn, Rye,
Buckwheat, Rice and Special Machinery, Turbine
Water Wheels and Mill Supplies of
Every Description.*

THE WOLF CO.

Export and Atlantic Coast Department,



Main Office and Works, Chambersburg, Pa.

No. 804 Penn'a Bldg., PHILADELPHIA, PA.



Our French Burr Mills

Are used by the leading mills because they are the Best. Investigation will convince you of their superiority. Catalog and Discounts on application.

SPROUT, WALDRON & CO., P. O. Box 310, MUNCY, PA.
FLOUR MILL BUILDERS AND CONTRACTORS.



BURR STONES

For all purposes,
Manufactured by us.

Also ROLLER MILLS, SMUT MACHINES and
GENERAL MILL MACHINERY.

Established 1847.

B. F. STARR & CO., Baltimore, Md.



**THIS DRAY WE RECOMMEND FOR MERCHANTS,
COTTON MILLS OR WAREHOUSES.**

MADE OF BEST SEASONED HICKORY AND OAK.

PRICE LOW.

Write for Price List and Catalogue.

W. P. HORNER WAGON MANUFACTURING CO.
DANVILLE, VA.

The Cushing Company

SUCCESSOR TO

J. W. BOND CO.
Established 1848

AND

CUSHING & CO.
Established 1810

IS PREPARED TO FURNISH

Office, Bank and School Supplies OF EVERY DESCRIPTION

We can supply you with Desks, Furniture, Blank Books, Stationery,
Printing, Lithographing, Engraving and everything you use for office work.

THE LARGEST STOCK OF BOOKS IN THE SOUTH

THE CUSHING COMPANY

14 W. Baltimore St.

Baltimore, Md.

Patterns in Wood and Metal.

THE Richmond Pattern Works

305, 307, 309, 311, 313 North 18th St.

RICHMOND, VA., U. S. A.

Ornamental and Machinery Patterns
of all kinds; Marine Patterns
a Specialty.

Practical Construction Guaranteed.

IRON AND BRASS CASTINGS

OF EVERY DESCRIPTION.

Copper Works.



McWILLAN BROS.
Fayetteville,
N. C.
Savannah, Ga.
Jacksonville,
Fla.

McWILLAN BROS.
COMPANY,
Mobile, Ala.
Mfr's of

Turpentine Still,

And General Metal Workers.

CAREY'S MAGNESIA STEAM PIPE AND BOILER COVERINGS

Are the Most Efficient, Durable and Economical.

The Philip Carey Manufacturing Co., { General Offices—**LOCKLAND, OHIO.**

FACTORIES—Lockland, O., Baldwinville, Mass., Plymouth Mtg., Pa.

BRANCHES—New York, Philadelphia, Boston, Pittsburg, Cleveland, Cincinnati, Charlotte, Atlanta.

See our Roofing Advertisement on Page 45.

American Sheet Steel Company

Battery Park Building New York

Manufacturers of all varieties of

Iron and Steel Sheets

Black and Galvanized, Plain and Painted
Flat, Corrugated and "V" Crimped

Apollo Best Bloom Galvanized Sheets
Wellsville Polished Steel Sheets

W. Dewees Wood Company's Planished Iron
W. Dewees Wood Company's Refined Iron

GALENA-SIGNAL OIL CO. FRANKLIN, PA.

Successors to Galena Oil Company and
Signal Oil Company, sole manufac-
turers of the celebrated Galena
Coach, Engine and Car Oils
and Sibley's Perfection
Valve and Signal Oils.

Charles Miller,

PRESIDENT



**OIL and LABOR SAVER
IRONSIDES
IMPROVED**

Tormay PAT. Oiler

For Mine-Car Wheels and
General Purposes.

The Ironsides Company,
COLUMBUS, OHIO, U. S. A.

Good Seller for Supply Houses.

THE PITTSBURGH REDUCTION CO. PITTSBURGH, PA.

ALUMINUM

Electric Conductors, Ingots, Bars, Plates,
Castings, Tubes, Sheets, Etc.

Southern Office, Bond Bldg., WASHINGTON, D. C.

COLUMBIA SUPPLY CO. COLUMBIA, S. C.

DEALERS IN—

Machinery Supplies.
Everything for Saw Mills.
Rubber, Leather and Gandy Belt.
Pipe, Valves and Fittings.
Estimates Given on Specifications.



Black Diamond Prepared Roofing

In Two and Three Ply.

We make nine-tenths of all the Prepared Roofing
sold in the United States. A better testimonial?

BARRETT MFG. CO.,

St. Louis, Mo.

Philadelphia, Pa.

New Orleans, La.



THE INGERSOLL- SERGEANT DRILL CO.

26 Cortlandt St., N. Y.

The Pohle Air Lift System.

Water Raised by Com-
pressed Air.

AIR COMPRESSORS.

SUPERIOR GRAPHITE PAINT

excels for bridges, structural steel, roofs (especially
canvas roofs), tanks, boiler fronts, corrugated iron—
in fact for all surfaces, wooden or metal, exposed to
heat, water, weather, or destructive fumes.

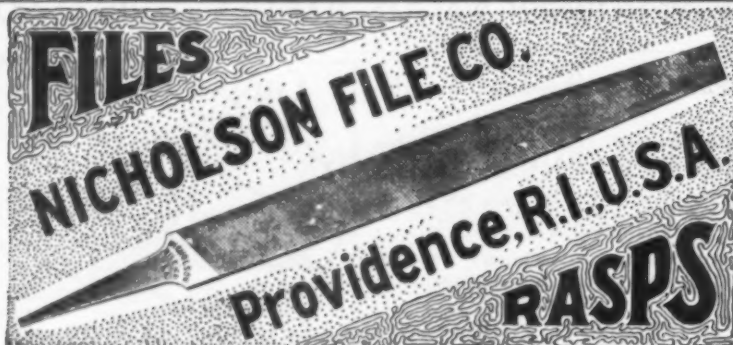
This paint is durable because it's made of the best
materials and with the greatest care. We shall be
pleased to send you further information.

Detroit Graphite Mfg. Co.

New York.
Chicago.

Detroit, Mich.

Cleveland.
Buffalo.



Vol.

Man

Manu

OFFIC

RICH

SUBS

To FOR

BAL

CO

Adv

adver

Satur

in the

For

we sh

Morn

THE

ufactor

business

pose o

business

keep i

indust

velopm

west. A

tion wi

ners' R

to all w

South

derfully

where d

cial act

ening

kinds, r

ing sup

tions, e

and ski

will suc

tion.

The D

ply to

the "C

the Man

ing ever

ing, rail

organiz

west, an

general

want to

new ent

tion it

is

In a le

ord Mr.

Antler

Va., writ

I have

Journal

for

that dur

ing

have got

saving m

lars. No

ment of

the manu

out same

line of y

not know

well, as

that in

ret

Adverti

ties offer

the locati

prices will

MANUFACTURERS' RECORD.

A WEEKLY SOUTHERN INDUSTRIAL, RAILROAD AND FINANCIAL NEWSPAPER.

VOL. XLIV. No. 15-1
WEEKLY.

BALTIMORE, OCTOBER 29, 1903.

\$4.00 A YEAR.
SINGLE COPIES, 10 CENTS.

Manufacturers' Record.

PUBLISHED EVERY THURSDAY BY THE
Manufacturers' Record Publishing Co.

RICHARD H. EDMONDS, President.
THOMAS P. GRASTY, Vice-President.
FRANK GOULD, Secretary-Treasurer.

OFFICE: MANUFACTURERS' RECORD BUILDING
BALTIMORE.

RICHARD H. EDMONDS,
Editor and General Manager.

THOMAS P. GRASTY,
General Staff Correspondent.

SUBSCRIPTION, \$4.00 a Year.
To FOREIGN COUNTRIES, . . 25s. 6d. a Year.

BALTIMORE, OCTOBER 29, 1903.

COPY FOR ADVERTISEMENTS.

Advertising copy (changes or new advertisements) should reach us Saturday Morning to insure insertion in the issue of the following week.

For the first issue in the month we should receive copy by Friday Morning of the week preceding.

THE DAILY BULLETIN of the Manufacturers' Record is published every business day in the year for the purpose of aiding manufacturers and business men generally who need to keep in daily touch with the new industrial, railroad and financial developments of the South and Southwest. Supplementing and in connection with the work of the Manufacturers' Record, it is an invaluable aid to all who are seeking business in the South and Southwest, the most wonderfully endowed section of America, where industrial, railroad and financial activity is creating an ever-widening market for machinery of all kinds, railroad equipment and building supplies, and for financial operations, etc., and where the knowledge and skill of the engineer and expert will find their largest field of operation.

The Daily Bulletin is intended simply to cover every day the work of the "Construction Department" of the Manufacturers' Record in reporting every new mining, manufacturing, railroad and financial enterprise organized in the South and Southwest, and it is not intended to be a general daily newspaper. To all who want to be advised every day of every new enterprise organized in that section it is invaluable.

In a letter to the Manufacturers' Record Mr. E. Goodman, president of the Antler Coal & Coke Co. of Lynchburg, Va., writes as follows:

I have been a reader of your most valuable journal for the past two years, and can say that during this time the information that I have gotten from it has been the cause of saving my company many thousands of dollars. No man connected with the development of the country, or with the mining or the manufacturing business, should be without same. I would not be without this magazine of yours for many times its cost. I do not know how any man could invest \$4 as well, as it will undoubtedly bring many times that in return.

Advertisements of Southern localities offering special advantages for the location of manufacturing enterprises will be found on pages 52 and 53.

ITALIANS FOR THE SOUTH.

Within a week two vessels have landed at New Orleans 2134 immigrants from Southern Italy, who have scattered over the agricultural sections of Louisiana and Texas, where they readily adapt themselves to farm methods and are generally regarded as advantageous additions to the population, being different from some of their fellow-countrymen who have been brought into the industrial centers of other parts of the country. It may be that these landings are but part of a determined movement to divert Italians to the South, reflected in reports made through the New York Sun of a trip through the South of officials of a society in New York for the protection of Italian immigrants. They reported many invitations to send Italian laborers to the South, with assurance that they would have opportunity to advance themselves. The calls come from Kentucky, Tennessee, Missouri, Mississippi and Louisiana for mill hands and farm labor, the preference being expressed for immigrants from the north of Italy. Italians are not new to the South, and especially to Louisiana, where in the last census year there were 17,431 of them, constituting more than 30 per cent. of the foreign-born element in that State. It is believed that many more of them can find opportunities there without creating such conditions as those which have aroused apprehension in New England, New York, Pennsylvania and other States which have received the bulk of recent foreign immigration, now coming into the country at the rate of about 100,000 a month. At the same time there is an increase in the movement to the South from the North and West of natives of this country or of the sturdier foreign-born who did not stop at Atlantic ports to swell the congestion of great cities, but who, in the wider reaches of the West, have become thoroughly imbued with the American instinct, and can be only a valuable addition to any community in which they may make their home. These are to be the future landowners, together with natives of the South, while the Italians and others of their class may be expected to aid in meeting the temporary exigencies in the labor world, due to the rather sudden expansion of industrial life in the South and to other causes affecting the stability of native labor.

THE NATURAL FLOW OF COMMERCE.

Contesting the plan of spending \$100,000,000 to enlarge the Erie canal, the New York Sun says that one might as well attempt to stem Niagara as to attempt "to attract even a dribble of the vast trade by water that is beginning to follow the line of least resistance to our Southern seaboard." The Sun gives in this connection special heed to an incident of the steamship *Colonian*, drawing twenty-nine feet, passing out of the Mississippi, carrying to Europe an enormous cargo of cotton and grain, and from which it preaches the following practical sermon:

It is not higher rail rates or an inadequate Erie canal that has placed New Orleans in the front of wheat shippers. It is her geographical position at the outlet of the Mississippi basin, with its 9000 miles, or about two-thirds of our total river navigation, that has marked her for prosperity. Her superior advantages have been clinched by the further fact that the center of wheat production has been moved from the East to the heart of the Mississippi valley.

When the Genesee valley was the center of wheat culture, or even when this center moved west to Ohio, the Erie canal was a great factor in wheat movement, but now that the wheat lands fringe the arterial water system of the country from Minnesota to Kansas, now that grain is carried in bulk from St. Louis to New Orleans at one mill per ton mile and coal is freighted from Pittsburgh, some 2000 miles, at rates not exceeding those by rail to Atlantic tidewater, it is folly to imagine that any widening or deepening of the Erie canal can possibly divert water-carried wheat from the pathway which nature marked out for it.

All that New Orleans needed to get the trade was to increase her dockage and other shipping facilities. These improvements have been rapidly multiplying. The port itself extends some ten miles along each river bank, and the great harbor of the Mississippi, stretching from the jetties over a hundred miles inland, may be in time inadequate for the mighty volume of traffic which these waterways are destined to carry.

New York has been given in recent years divers explanations, more or less imaginary, of the increasing importance of the Gulf ports in export trade. The truth of the matter is stated by the Sun. The construction of the Erie canal in the early years of the century undoubtedly diverted to New York city much of the outward-bound traffic that otherwise would have reached New Orleans. The advantage thus gained has long been enjoyed by New York, but with the passing of the center of grain production beyond the Mississippi and with the construction of north and south railways in the Mississippi valley the natural order has been restored. That does not mean necessarily a decline of New York in commerce, but it suggests that if it wishes to maintain the proportions of that commerce, even though its character be changed, New York cannot afford to waste its energies upon misdirected undertakings, or to follow false trails.

FOR INDUSTRIAL MEMPHIS.

The Industrial League of Memphis is making an effort to secure 600 new members. That the league has the right to ask for this increase is proved by the work undoubtedly accomplished by the league in the recent past in attracting new industries to Memphis. These have added to the population of the city and have increased its local business generally and the individual business of many a man far beyond the cost of membership in the league. That fact, together with the fact that increased membership will enable the league to accomplish greater things, ought to be sufficient almost to make an effort to gain new members unnecessary. The increase ought to be automatic, giving the city the agency for making its opportunities known far and wide, for welcoming the newcomers and for concentrating all the energies of industrial and

municipal growth. What Memphis has accomplished in the past two or three years shows what Memphis can do. Accomplishment should be only an incentive to greater endeavor.

THE MISSISSIPPI VALLEY.

A notable feature of this week's convention at New Orleans for the furtherance of the improvement of the Mississippi river under government auspices is the cordial interest in the plan manifested by the management of great railroad systems in the Mississippi valley. A striking illustration of this was the letter sent to the convention by Mr. George J. Gould explaining the plans of his system for the Mississippi valley, involving the expenditure of millions of dollars. Many of these plans are now under way; others have yet to be developed. They are but parts of the coming development of the great area drained by the Mississippi and its tributaries, which will be assured and hastened by prompt and thorough handling of the river problem.

SOUTHERN TEXTILE WORKERS.

At the Philadelphia convention last week of the United Textile Workers Secretary Hibbert expressed sorrow that he could find little to encourage his organization in keeping up its work in the South, and a "special organizer," after detailing his experiences, said that the chief obstacle he had to contend with was "the ignorance of the mill people in regard to trades-unions." Perhaps the Southern operatives are not such an ignorant set as the United Textile Workers' "organizer" would have one believe. He probably has been tangled up in some of the statistics of Southern illiteracy and accepts the fallacy, which the publication of those statistics is intended to promote, that illiteracy means ignorance. He should bear in mind that personal acquaintance with "organizers" from outside has not a little to do with hesitation on the part of the operatives to become organized. The individual who concocted the fable about the cat pulling the chestnuts out of the fire for the monkey could neither read nor write, and even those Southern operatives who are supposed to be so terribly illiterate are able to apply the fable when "organizers" of any kind come among them from distant points. There are other suggestions bearing upon this matter made by the New York Commercial Advertiser as follows:

We hear of no distress among the Southern textile mills. Most reports agree that they are prospering exceedingly. From New England, on the other hand, where trades-unionism flourishes, comes word of hardship caused by the closing down of mills and their transfer to the Southern States, where labor troubles are almost unknown. In Philadelphia the local union is still suffering from a protracted strike which cost the operatives hundreds of thousands of dollars in wages without gaining anything in return.

Is it likely that the Southern mill hands, comparing their present situation with that of the operatives of the North, will jump at offers to organize them into unions? We are inclined to believe that what the organizer mistook for ignorance down South was

rather knowledge of certain phases of trades-unionism which have proved a hindrance to the advance of workmen instead of a help. Organization of labor that by strikes and unreasonable demands drives capital out of business is the worst enemy of labor, a fact of which the busy mill hands in the South are not likely to be ignorant. The laboring men of the South are only beginning to get the benefits of industrial activity. Why should they adopt methods that have closed hundreds of mills in other parts of the country?

It might have been added, why should Southern operatives at peace with themselves and the world contribute from their earnings to support the agitation of the United Textile Workers, which has brought such distress upon cotton-mill interests of all kinds in the organized parts of the country, and why should they help to make an easy living for "organizers?" That is about what such organization is coming to.

A FLY IN THE OINTMENT.

In its review of the Reunion of Native North Carolinians at Greensboro the Progressive Farmer of Raleigh, overwhelmed evidently by the greatness which the conference was calculated to promote, had the bad taste to commit the following:

Senator M. W. Ransom was nominally the presiding officer, but most of the actual work fell to Dr. McIver. General Ransom is clearly in his dotage, and we do not think it is good taste to longer exhibit him in places of such responsibility.

That paragraph is eminently typical of the new "educational" movement for the South, in which a few youngish North Carolinians at home and abroad have gained some note, and which does not seem able to avoid patronage or ignorance of the past. It may be suggested, however, that years of faithful service to one's State, years of accumulated honors, ought to inspire youth with respect for age, that progress is not necessarily inseparable from insolence and that mutual incensing is not made more acceptable by reflection upon others. The writer of that bumpkins paragraph in the Progressive Farmer is probably incapable of appreciating the significance of his words. If a man in his dotage was selected to be "nominally the presiding officer" of the conference, the men who from far and near accepted invitations to be present are likely to ask what was the real purpose of the conference.

EVASIONS OF CHILD-LABOR LAWS.

From time to time charges have been made directly or inferentially that the laws against the employment of children under fourteen years of age in Massachusetts are violated. For example, the Fall River Daily Herald said on October 2:

It is probable that regulations relating to child labor are not always observed as they should be. There are evasions in most of the largest centers, due in no small measure to the greed of shiftless parents, who deserve to be disciplined along with those who lend themselves to their purposes.

So, too, the Boston Journal said on October 7:

The laws of Massachusetts which regulate child labor are not extreme. Their violation, when it takes place, is not so often due to the greed of capital as to the cupidity of parents who falsify a child's age to profit by its toil.

On the very day this was published delegates from Lowell reported at the convention at the National Spinners' Union:

There is no question that children are working in the mills under school age.

It was voted by the union that a committee ascertain from Chief Wade of the State police "why the law is applied

one way in one city and another way in other cities, as was brought out in the discussion." Three days later Chief Wade, in a report to the governor based largely upon tours by himself and inspectors in the four western counties of the State, and obviously based only incidentally upon the charges of the Spinners' Union, said:

While exceptional cases of violation do occur, the child-labor law has never been better enforced and complied with than at the present time.

That Lawrence, Lowell or Fall River employ children without proper certificates I have repeatedly denied, for the reason that I am kept constantly informed by the officers of my department that there is no truth in the assertion. That school authorities may have been deceived by misrepresentations is not impossible. It is not always possible to obtain the baptismal record of the children.

For persons who have followed closely the crusade by Lieut.-Gov. Curtis Guild, Jr., and others of Massachusetts, turning upon this very question of child labor, it is interesting to note that at least two reputable and well-informed newspapers of Massachusetts acknowledge that the law is evaded and that the officer charged with its enforcement acknowledges "exceptional cases of violation" and the possibility that in the matter of certificates school authorities may have been deceived by misrepresentations. In the South generally the possibility of such evasions, which, of course, imply perjury, has been created only recently. But in the campaign which has placed during the past two or three years child-labor laws, more or less futile, upon the statute-books there has developed a class of agitators to whom are applicable the words of the Fall River Herald referring to agitators against evasions and violations in Massachusetts:

They are seeking notoriety, and nothing else. They are not honestly exercised over the abuses by which they pretend to be disturbed, but selfish motives prompt them to pose as reformers.

THE SOUTHERN FARM MAGAZINE.

Practical interest in immigration to the South is manifest in the November issue of the Southern Farm Magazine. It contains a number of significant statements encouraging to everyone who desires that the full possibilities of the South may be realized. A trip of 140 representatives of the Missouri Pacific Immigration Bureau brought out the assertion by Mr. E. E. Barclay, immigration agent of the system:

"The Missouri Pacific will in the next few months bend every effort for bringing people and capital to Arkansas and Louisiana, and I believe that hundreds of thousands of dollars and thousands of desirable citizens will be poured into these two States."

Mr. F. Y. Anderson, land commissioner of the Queen & Crescent System, tells of the location along the lines of his system during the past year of 129 families, not one of them purchasing less than forty acres, and a great many of them a larger acreage, and Mr. R. L. Pritchard, land and industrial agent of the Central of Georgia Railway, writes that he is pleased to note the intelligent, law-abiding, industrious and progressive class of homeseekers that are availing themselves of the many natural advantages of the South. In similar strains are letters from Mr. J. H. Bouslog, industrial and immigration agent of the Gulf & Ship Island Railroad; Wilbur McCoy, industrial and immigration agent of the Atlantic Coast Line Railroad; C. C. McMillin, general agent of the passenger department of the Georgia Railroad, while Mr. John Sebastian, passenger traffic manager of the Chicago, Rock Island & Pacific Railway,

reports a remarkably healthy movement into the territory tributary to its lines.

These newcomers are likely to be agreeably surprised in many respects, but in none, perhaps, more than in the pace which the South has kept with the improvement in agricultural methods. This is reflected in the changes which have occurred in the implement trade. These are described by Mr. Albert Phenix in a special article, while one on similar lines is contributed by Col. J. B. Killebrew, discussing agriculture, past and present. But the South in some particulars has not yet been restored agriculturally to its condition before the war. This is especially notable when cattle statistics are studied, and it is recognized in an article by Mr. Thomas P. Grasty urging that greater attention be given to improved breeds of cattle.

Rural schools and trolleys, practical roadmaking, phases of farm labor, market-gardening and other forms of diversification are discussed succinctly, while the regular departments are filled with entertainment for the home circle and the general reader.

The Southern Farm Magazine is published monthly by the Manufacturers' Record Publishing Co., Baltimore, Md. The regular subscription price is \$1 a year, but for a few weeks a special offer of twenty-five cents a year is made for new subscribers.

SAFEGUARDS IN ELECTRICITY.

Referring to the recent terrible accident on the Paris underground electric railway Mr. George Westinghouse, the well-known engineer, has written an important letter which was given to the public through one of the New York newspapers. Mr. Westinghouse contends that the rail carrying the current of electricity should be charged only when required to operate a train, also that there should not be at any point of the third rail more electric energy than sufficient to operate one train. Furthermore, that there should be as little electric machinery as possible upon the train, and that it should be so situated as to be under the convenient supervision of the men in charge thereof. In addition to this, he says that there should not be used in tunnel and elevated railroad work any material which would create fire or dense smoke, and adds that these requirements can easily be complied with. He then points out that trains should be constructed of iron or steel, the interior finish being of incombustible material; that the third rail should be divided into suitable sections, each receiving current only when needed for propelling a train; that the amount of current supplied to each section should be limited by suitable devices, so that in case of a short circuit on the train the current would be automatically and immediately cut off some distance from the section of the third rail connected with the train; that the current should be cut off from each section of the third rail by the motorman if need be; that no live conductors, other than the third rail, be in close proximity to the track, and that no wires carrying high voltage be used except upon motor cars, such cars to be only at the ends of trains. In conclusion he says that the electric art has so advanced that compliance with such requirements would be simply a matter of additional expense, and that such expense would be incomparable to the losses which companies must suffer if they do not make the operation of their lines absolutely safe.

The horrors of the Paris disaster would alone be sufficient to impress upon the public the necessity for greater safety surrounding third-rail electric railways, but a recent accident on the elevated road in

New York adds its share to the evidence of peril. Mr. Westinghouse's words of caution and advice are therefore very timely. He points out the dangers and suggests the remedies which are obviously proper to apply, and it is to be hoped that before further construction of third-rail electric railways is done his advice will be heeded, as well as that reforms will be made upon systems already established which do not possess the safeguards that he describes. The advantages of electricity for motive-power on either elevated railroads through cities or in long tunnels where it is necessary to avoid smoke are so great that public opinion demands its employment. But while the service of the new motive power is being extended its dangers must not be lost sight of, and railway builders and companies should not wait for a disaster in this country like that in Paris to arouse public sentiment to a pitch which will command them to provide needed safeguards, but they should install them without delay.

TO ADVERTISE ARKANSAS.

Col. R. B. Parrott has written to the mayor of Hot Springs, Ark., and the president of the Business Men's Club of that city suggesting the erection upon government reservation at the Springs at a cost of about \$25,000 of a palace of unique design in which should be kept a permanent exhibit of the agricultural, mineral and timber riches of the State, with statistical facts for each county, giving the number of acres of land in cultivation, the value of lands, the public schools, county and State taxes, etc. He argues that proper co-operation of State and county authorities would result in bringing the resources of all the counties to at least 150,000 visitors to Hot Springs every year. He further suggests that the palace could be used annually or semi-annually for special displays, and he asserts that if the idea is carried out properly it will be the cause of introducing hundreds of thousands of persons into Arkansas, of increasing values, of developing railroads, etc. He says that since his residence at Hot Springs he has been deeply impressed with the resources of the State and the peculiar advantages of the city, and he adds:

"There is no doubt that with the proper advertisement Arkansas in the next decade will develop faster than any State in the Union, excepting Texas and West Virginia, and it is the duty of every patriotic citizen of this State to unite with the citizens of Hot Springs in order to effect this development. It means prosperity to the Springs, to the State and every county in the State, thereby benefiting not only the taxpayer, but the laborer, the clerk and the professional man."

There is a sound basis for Colonel Parrott's enthusiastic opinion of Arkansas and for his argument that the right kind of advertisement will aid the rapid development of the State. Its known riches have already attracted the investor and the homeseeker, though not in the numbers justified by the facts. Greater interest may be developed and the discovery of other riches may be promoted through some such plan as that suggested by Mr. Parrott.

TROLLEYS IN CITY GROWTH.

Memphis is talking of trolley lines projected to connect it with several nearby towns. Unwilling that these projects should sleep, the Commercial-Appeal makes a strong argument in behalf of them. It cites the experience of other communities to prove that the encouragement of suburban development within certain limits through the extension of electric railways will add to the value of real estate in the city; it says that these

extensions will make truck farming, dairying and poultry-raising profitable, thus contributing to the health and the comfort of the city, and it looks toward the time when the practical extension of the city limits through such facilities for rapid transit may create the fact of Memphis embracing the whole of Shelby county, thus doing away with the expense of a double government. This argument is justified by conditions which have been created in other progressive cities, and which would not exist today were it not for the electric railway. New England, already thickly settled, has in some localities become almost a continuous city, with the trolley line as its main street. Similar conditions are developing in Middle, Western and some Southern States, and should be found in a few years around Memphis.

BALTIMORE AT ST. LOUIS.

Mr. Clarence H. Forrest, secretary of the Merchants and Manufacturers' Association of Baltimore, is preparing to publish for gratuitous distribution at the St. Louis Exposition a souvenir volume descriptive of Baltimore as a commercial, manufacturing, financial and educational center, and giving a graphic account of Maryland's exhibit at the World Fair. In an advance notice of the publication he calls attention to the value and importance of widely disseminating the principal facts about Baltimore's trade and manufactures, and says:

"The people of the South and Southwest will participate largely in the exposition, and Baltimore should seek to have our city's interests set forth in every possible way. Recent events have tended to enlarge our commercial relations with the West also, and we should not neglect to take advantage of every opportunity to inform the people of that section of our resources and facilities for trade."

SAVANNAH AND BREMEN.

It is proposed to unite the movement for a deeper channel at Savannah with movement for the establishment of a direct line of steamers between Savannah and Bremen. It is announced that the North German Lloyd is anxious to get into Savannah. As its steamers of 7000 and 8000 tons demand deep water, the success of the plan for a direct line to Bremen depends largely upon the deepening of the Savannah river channel to thirty feet. The business men of the city welcome the possibility of the direct line, as it would mean an increase of the import business at the port and the landing there of a substantial class of immigrants.

TEXAS WEALTH ADVANCING.

The total assessed valuation of property in Texas for 1903 is \$1,056,159,764, an increase over last year of more than \$38,000,000 and an advance since 1880 of more than \$740,000,000. In 1880 the taxable values were nearly \$50,000,000 less than they were in 1864, but since 1880, with the population increasing from 1,591,749 to about 3,300,000, or something over 100 per cent., the assessed valuation has increased from \$311,470,736 to \$1,056,159,764, or 239 per cent.

FOR AN ARKANSAS MILL.

The committee that visited a few weeks ago leading cotton mills in South Carolina with a view to determine whether it would be feasible to establish a cotton mill at Fayetteville, Ark., has reported that such an undertaking would be a profitable investment, although there would be some difficulty at first in securing and training the necessary labor.

METHODS OF DEVELOPMENT APPLICABLE TO THE SOUTH.

By COL. J. B. KILLEBREW.

[Written for the Manufacturers' Record.]

A recent visit to the Pacific coast over the Great Northern Railway has impressed the writer with the powerful agencies now at work to develop the great Northwest and British Columbia. These agencies may well be applied to the South, which is making gigantic strides in manufacturing, in agriculture and mining and in the accumulation of material worth, for compared with the Northwest the natural resources of the Southern States are far greater and more diversified.

The greatest factor in the rapid growth of the States of Washington and Montana and of British Columbia are the railroads. Fourteen years ago the writer visited this region at a time when these States were just beginning to unfold their natural wealth. At that time all the western part of the territory lying north of the Northern Pacific Railroad was occupied by great herds of cattle and flocks of sheep running upon the plains, with here and there a gold, silver or copper mine in operation. There were no ranches, no wheat fields, and the great lumber trade had scarcely begun, and the agriculture of Washington and Montana was at a very low ebb.

The Great Northern Railway was built for the most part during the nineties without a land grant or other subsidy from the government. It traverses a belt of territory where there are but few, if any, sandy wastes. Its line generally borders the watercourses, following in line the Mississippi, the Missouri and the Columbia and their tributaries. Leaving the iron beds of the Lake Superior regions, it traverses the greatest wheat-producing lands on earth, then enters upon the plains where graze the largest flocks of sheep and herds of cattle and droves of horses on the continent. It then passes into the rich mining districts of Montana and Washington, and is tributary to the mining regions of British Columbia and Alaska. The salmon fisheries of the Columbia and Skagit rivers and of Puget sound, with the heaviest forests yet found in any country, give assurance of the largest traffic.

The system has now in operation 5489 miles. Its trunk lines stretch from Lake Superior to Seattle, a distance of 1788 miles, and from Lake Superior to Portland, Ore., 1882 miles, and from St. Paul to Seattle, 1812 miles. Between these extreme eastern and western points there is a line common to them all from Rugby Junction to Havre, a distance of 493 miles. East and west of these points not fewer than sixty branch lines go out so as to ramify the whole territory tributary to the main lines. On the main lines and on the branches or feeders there are 700 stations in the States of Minnesota, Wisconsin, Nebraska, Iowa, South Dakota, North Dakota, Montana, Idaho and Washington in the United States and many more in Manitoba and British Columbia. Four-fifths of these towns and stations have been built up or increased in population many fold since the Great Northern Railroad was built. It is wise to inquire what has been the directing policy of the railroad management that has developed such rapid growth and built so many flourishing towns and opened so many happy and prosperous homes. It is well to ascertain whether this same policy may not be applied to the building up of the Southern States.

Mr. James J. Hill, the prime mover and the leading spirit in the building of this

great transcontinental railroad, laid it down as a self-evident proposition that the prosperity of the railroad is bound up with the prosperity of the people living upon it. His efforts were therefore directed to the consummation of this great end. First of all he established the lowest possible rates for industrious immigrants. This rate was often less than three-fourths of a cent per mile of travel. At one time he carried settlers from Chicago to Portland, Ore., and intermediate points at a maximum of \$13 per head for grown persons. Thousands of intelligent farmers living in the States, as well as person just landed at Castle Garden, took advantage of these rates and settled on the roads, entered homesteads, dug irrigating ditches and established farms yielding more wheat per acre than any new lands ever known. Corn fields, wheat fields and vegetable farms in the eastern territory are balanced by great orchards, hop fields and alfalfa lands, yielding crop after crop, in the Pacific States.

The broad policy adopted by Mr. Hill was to give the settlers along his lines better rates than to those occupying competing points. He argued with plain common sense that all the produce grown by them would pass over his lines, and he gave the greatest possible encouragement to increasing the volume of this produce. The result is that every orchardist, every wheat planter, every producer of hay and stockman considers Mr. Hill as a coadjutor in his work.

Nor do his efforts stop with the farmers. The lumbermen of Washington owe their chief prosperity to his liberal policy. A few years ago 127 shingle mills were idle because the freight of \$1.20 per hundred pounds to the Eastern States was equal to the price of the shingles after reaching their destination. A delegation waited on Mr. Hill and represented their inability to carry on their business without a reduction of rates. Mr. Hill inquired how much they could afford to pay to Chicago and other distributing points in the Mississippi territory. Their answer was sixty-five cents per hundred pounds. Mr. Hill told them very frankly they could not pay this rate and live. He said in effect: "If you will pack your shingles in square bales, and not in bales with widening ends, so that a car can carry a larger quantity, I will send them to Mississippi points for forty and fifty cents per hundred pounds." The suggestion as to baling was adopted. The 127 mills were put in operation, and the result is that the shingles made in Washington are now largely used in all the States east of the Mississippi river. A great deal of timber of no value for lumber was brought into requisition for making shingles. The stumps standing eight or ten feet high and from two to twelve feet in diameter were cut down and ripped up into shingles, thus using what would otherwise have been worse than wasted, for they cumbered the ground and added to the expense of clearing it for cultivation. The freight on lumber was also reduced, so that the mills on the Pacific coast were able to supply the great demand for lumber over a stretch of nearly 2000 miles through the treeless prairie regions. The moderate prices for lumber stimulated the building up of the hundreds of cities, towns, stations and farmhouses along the roads.

I took the pains to inquire of the high officials of the road if these great reduc-

tions in the rates of freight did not reduce the revenues of the road. The answer was prompt and convincing. Turning to an official report of the road, it was shown that the prices of freight have been constantly and regularly lowered as the country has been built up. It was shown that the average rate in 1883 was 1.968 cents per ton-mile; in 1893, 1.190 cents; in 1903, .857 cent, or less than one-half of what it was twenty years before. In the State of Washington the average rate is only .72 cent per ton-mile. This low rate has been reached notwithstanding the fact that everything that goes to increase the cost of transportation has been increased in price—labor, rails, ties, iron, fuel, etc. How is this done? Simply by increasing the volume of traffic and never hauling partially-loaded cars across the continent.

The capital of the road was increased from \$20,000,000 in 1890 to \$125,000,000 in 1897, and the stock was all paid up at par. There was no "water" in it and no promoters' stock. The main part of the road was built at a time of profound financial depression, the greatest activity in building being in 1893.

For the year ending June 1, 1903, the total revenue of the road was \$40,785,646; operating expenses, \$20,076,828, giving the net earnings \$20,708,818. In 1902 the total revenue was \$36,032,256; operating expenses, \$17,789,164, showing the net earnings to have been \$18,243,091. These figures do not include the Spokane Falls and Northern Railroad division. The per cent. of operating expenses to gross earnings in 1903 was 49.23, as against 49.37 the previous year. The net earnings per mile of railroad in 1903 were \$3772.17; in 1902, \$3475.19. We thus see although the freight was reduced to .857 cent per mile-ton, the lowest in the history of the road, the increase in net earnings per mile was \$296.98.

Some interesting facts as to the lumbering industries of the State of Washington were gathered. There are now produced in that State 10,000,000 feet of lumber and 30,000,000 shingles every day. It would seem to an Eastern man that this would exhaust the supply of timber, but the estimated quantity of merchantable lumber which the forests of Washington will furnish is 250,000,000,000 feet. At the present rate of consumption it will require between seventy and eighty years to exhaust the present supply.

There are numerous places where the timber on forty acres will yield 6,000,000 feet of merchantable lumber, or 150,000 square feet per acre. The average in the heavy timber districts is probably 50,000 feet per acre. It is estimated that if the forests of Washington were cleared and put in wheat, the wheat yielding an average of twenty bushels per acre, it would require the product of 225 years to equal the freight which the forest growth will supply.

Trade with Dutch India.

H. Fasting of Antwerp writes to the Manufacturers' Record that he is investigating many American products with the view to introducing them into Batavia, in the Dutch India. He mentions among the goods in which he is interested alum, beer, candles, cement, lamp-chimneys, earth colors, buttons, combs and brushes, copper and its derivatives, cordage, cottons of various kinds and fancy cloths, flannels, enameled goods, glass and glassware, envelopes, glues, hats and caps, writing inks, iron and cutlery, hardware, mirrors, lamps, pails and buckets, fireproof paints, saltpeter, soap, papers, soda, oil stoves, coal tar, sewing thread, watches, wool, wire and wire netting and zinc white.

MECHANICAL DRYING OF MINERALS.*

By C. O. BARTLETT.

More than fifteen years of practical experience and experiments in building mechanical dryers for the drying of minerals and other materials has given me many ideas, some of which may be of interest to the members of the American Mining Congress; hence this paper.

While the mountains of this country are rich in deposits of gold, silver and other precious minerals; while zinc and lead are found in many of our prairie sections, as well as in the mountains, and coal and oil in nearly every section, all of which have been and are now being searched for in every nook and crook by an army of the ablest men on the face of God's green earth, yet these very places in many instances are rich in equally valuable deposits of the finest kinds of clays, suitable for the very best quality of fire-brick and sewer pipe, crockeryware, paints and Portland cement.

There are beds of the finest quality of fuller's earth, marl, chalk, travertine, graphite and mica, and miles of peat in nearly every State from Maine to California waiting to be made into the very finest kind of fuel for almost any purpose, yet very little attention has been given these so-called common stuffs by these energetic and capable engineers.

All of these products are rapidly coming into general use, and will very soon command the best brains of our country—in fact, the time is right here now.

Ten years ago the manufacture of Portland cement in this country was almost unknown, and we were paying exorbitant prices for English and German brands. Then our engineers began to investigate, to dig and bore, and almost immediately found the finest quality of clays, marls, limestones and chalk just suited for making Portland cement. In Ohio, in Indiana and in the swamps of Michigan, in the Lehigh valley (Pa.), in New York, on the Hudson river, within tidewater; in Illinois and Missouri, within a few miles of Chicago and St. Louis; in Arkansas, Colorado, Montana, California and in many other places was found an abundance of the finest kind of material for making Portland cement. Capitalists were ready to put dollars into the business, and the result has been that last year more than 15,000,000 barrels of the finest quality of Portland cement were manufactured in our country, and of a better quality than could be produced in England or Germany—in fact, this might almost be called the cement age. Whole buildings are being made of it at three-fourths the cost of brick, and many railroads are using it in their culverts and bridge-foundation work, and are using \$1.50 common labor instead of \$4 and \$5 skilled labor.

Companies are being organized in many of our large cities to make artificial stone from Portland cement for building purposes, and I have little doubt but what this artificial stone can be purchased in Denver, shipped to this city and put into a building cheaper than the stone can be quarried, hewn and laid from the quarries of this vicinity.

To work these clays, limestones, etc., into cement it was found necessary to dry them. It would not do to guess at the amount of moisture in limestone or clay. The moisture must be exact; no guessing could be allowed. One per cent. too much or too little of this or that product would spoil the cement. Clay varies in moisture from 10 to 25 per cent., limestone from

6 to 12 per cent.; hence the actual necessity for some kind of mechanical dryers. As it is with clays for Portland cement so it is with clays for paints. I know of a certain so-called clay near Bedford, W. Va., so rich in iron and aluminum that by simply drying and calcining—in other words, burning out the vegetable matter—leaving iron, aluminum and silica, and afterwards mixing in oil, it makes the finest kind of paint, and so rich in aluminum is this particular product that a pine board painted with one coat will stand an excessive heat for some time without burning the wood; in fact, it seems to be better than the purest kind of graphite.

I have seen so-called clay paint in Madison county, Montana, so rich in aluminum and iron that by simply drying, pulverizing and mixing with oil that it has stood a severe weather test for years; in fact, it seemed to be as good as the metallic paint made from the best Lake Superior iron ore.

There are three ways to mechanically dry minerals:

1. By direct heat. By this is generally meant the use of the rotary dryer or a horizontal cylinder set in brickwork, with front and grates similar to a horizontal boiler. The cylinder is set on an incline, and revolves very slowly, from five to eight revolutions a minute. The material to be dried is fed into the cylinder at the front end, and at each revolution of the cylinder is carried forward toward the discharge end of the dryer, being continually picked up by the inter-elevators and cascaded while passing through the cylinder.

2. By heated air, which has first been heated, either by direct heat or by steam pipes, and afterwards passed through the material to be dried.

3. By steam heat direct, by bringing the material to be dried in direct contact with the steam cylinder or pipes.

The first method is by far the cheapest, for the reason that by using direct heat a temperature of 2500 to 3000 degrees can be had, while by using heated air the temperature is very much less, and by using direct steam heat the temperature is only from 230 to 330 degrees, according to the amount of steam pressure, and this temperature is on the inside of the pipe or cylinder, which means considerable less temperature on the outside, where the material is.

By first superheating the steam the temperature can be made much higher, but the cost of superheating the steam will nearly or quite counterbalance all gain in temperature.

Great care should be taken in the construction and erection of all direct-heat dryers, otherwise no end of trouble will be had. All iron parts should be so constructed as to allow for expansion and contraction, otherwise they will soon break. All settings and bearings for the dryer should be extremely substantial, on account of the liability to get out of place by the settling of the brickwork and by the extreme heat.

The steel sheets of the cylinder should be of the entire length, and all seams should run the longitudinal way of the cylinder. There should be no cross seams at all, for they are liable to break.

In building steam dryers great care must be taken with every joint or rivet, otherwise the expansion and contraction will soon cause the joints and rivets to leak.

In drying any and all kinds of minerals they should first be broken and crushed into two-inch cubes or less, as it does not

pay to dry large pieces of anything. So let it be understood that all material is supposed to have been crushed before entering the dryer.

It is difficult to dry anything in a body. It is necessary to have as large heating surface as possible and to keep the material being dried constantly in motion, cascading it through the heat and dropping on other hot surfaces, so that the heat can easily penetrate through a thin body of material, carrying off the moisture.

The cost of drying materials depends first upon the amount of water or moisture contained therein. In other words, concentrates, ores or silica substances will not carry more than 10 or 12 per cent. moisture, while clays and marls will carry two to three times as much, and peat will sometimes have as much as 80 per cent. moisture. It is generally safe to estimate on evaporating ten pounds of water for one pound of coal used or its equivalent when drying concentrates, ores, limestones and other similar products where the products of the fire can pass through the material to be dried. Therefore it will be readily seen that it will not pay to dry any kind of material containing 80 per cent. moisture unless it is very valuable. It can be dried, but the cost of doing it will be more than the finished product is worth.

To illustrate: We wish to dry peat. We start in with 100 tons of it, containing 80 per cent. moisture, and reduce to 5 per cent., which means to evaporate seventy-five tons of water, leaving twenty-five tons of dried peat. It will take one pound of coal or its equivalent for fuel to dry the 100 tons of peat, and it is difficult in drying peat to evaporate ten pounds of moisture with one pound of coal or its equivalent used, for the reason that after it is nearly dry it becomes somewhat combustible and is liable to burn; consequently it requires slow firing, otherwise you will burn it up.

I wish to speak particularly about peat, for the reason that there are a lot of learned fellows who honestly believe that it is an easy matter to dry 200 or 300 tons of peat a day—that by some peculiar system and manner it can be dried very cheaply—and I wish to say to all such that they had better go slow, for it is much easier to say than to do. It is far better to store the peat in large sheds, or even out of doors, where it will drain and dry by the winds and sun down to 30 per cent. moisture, after which it can be profitably dried on mechanical dryers.

It is quite a different matter to dry 100 tons of concentrates, ores or silica substances, for here we have only from 8 to 10 per cent. moisture, which we wish to reduce to 2 per cent., or which means about six or seven tons of moisture, requiring about 1500 pounds of coal or its equivalent to dry it, which is really a very small fraction, and as the freight rates are frequently very high, especially in the mountain regions, it will pay to dry out the moisture before shipping. In other words, it does not pay to ship water in ores and concentrates if the cost of drying them is less than the cost of freight.

The second important matter as to the cost of drying minerals is whether the material to be dried will admit of passing the products of the fire through the material or not without injury. In other words, it will be readily seen that better results can be obtained from the same amount of fuel by first passing the heat around the outside of the drying cylinder, then through the material. By this means the temperature of the gases passing from the dryer can be brought down to 125 degrees Fahrenheit, which, of course, means that nearly the entire heat of the coal or its equivalent is utilized, but where used on

the outside of the drying cylinder only not quite so good results can be obtained.

Most minerals, such as concentrates, ores and clays, are not injured by passing the products of combustion through them. Some fine clays and even some kinds of sand used for glassware will not admit of it, on account of the danger of coloration by the fire products. In all such cases it is necessary to use oil or gas for fuel or to keep the products of combustion on the outside only.

The third important feature is whether the material to be dried is of a silica or clay nature. If it is of a silica nature, the moisture is easily given off; if of a clay nature, it will be more difficult to evaporate the moisture; besides the sticky material is liable to adhere to the parts of the dryer, causing trouble, and consequently it is more expensive to dry. It is seldom, however, that anything will adhere to a heated surface.

The next or fourth feature as to the cost of drying is whether the material is of an explosive nature or whether there is danger of burning, such as coal, peat and similar materials. If so, the heat must be of a low degree. There is no danger of burning anything when it contains a considerable amount of moisture, and in drying some kinds of such materials it is sometimes well to use two dryers, firing heavily on the first dryer while there is plenty of moisture and finishing on another dryer with light firing.

The fifth feature regarding the cost of drying is whether it be necessary to dry down to a very low degree of moisture. In other words, it is much harder and more expensive to dry down to $\frac{1}{2}$ per cent. than to 2 per cent. moisture. Generally speaking, however, it is not necessary to go below from 2 to 5 per cent. on most materials.

Coal is one of the most peculiar and interesting of all the materials that we have to dry. With some materials it is simply to drive off the moisture, in others to drive off the moisture and not injure the color, while with coal the object is to drive off the moisture and preserve the gases, also the fine particles, which are the most valuable parts of the coal.

The use of the rotary kilns for roasting ores and for burning Portland cement has of late years increased very rapidly, and the use of powdered coal in annealing furnaces, and also the use of coal in a pulverized state under boilers, has caused a rapidly increased demand for pulverized coal. From observations taken during the last year, I fully believe that in all large and medium-sized plants the power will be supplied with coal dust, burned similar to gas. I feel sure that this is the only way to get perfect combustion, and that a very large saving can be made by using coal dust. This branch of the subject, however, is distinct by itself and cannot be treated in this paper.

This coal question is, however, very important, and has very much to do with the building up of our future. Some of our large factories in Cleveland, Pittsburgh and other large cities are using more than fifty tons of coal an hour for fuel in one department. This means a whole lot of mining, railroading, etc., and produces a very large amount of material in the form of steel and iron, afterwards to be worked up into different machinery.

Secretary Shaw said before this Congress that it is the exchange of materials that adds to the commonwealth and our country, and that is what we want, and he is right about the matter. We build the products and exchange them for your gold and silver. Millions of tons of coal are mined in Pennsylvania, West Virginia and Ohio, shipped to Cleveland, Fairport, Ashtabula and other Lake ports, loaded

*A paper read before the American Mining Congress at Lead, S. D.

on the Lake boats at the rate of fifty tons in less than two minutes, shipped to the Lake Superior ports and distributed throughout the Northwest, the same boats bringing back iron ore.

Coal to be satisfactorily and economically pulverized should first be thoroughly dry. To get the best results from grinding machinery there should not be more than 1 per cent. moisture in the coal. The grinding capacity of mills is nearly double on coal of 1 per cent. moisture to what it is with moisture of 2 per cent. There can be no set rule to be followed in drying coal, as it is rarely that we find two lots of coal that will dry alike. Some coal will give up its moisture easily and freely, and other grades will apparently grow wetter as they grow hotter. Within the past six months we have been called upon to dry in one dryer coal from which we could remove 8 per cent. moisture at the rate of fifteen tons per hour and other coal from which it was impossible to remove more than 6 per cent. at the rate of eight tons per hour. We have seen coal which has lain under cover for two months develop from 6 per cent. to 8 per cent. moisture on being heated and

last year cost the lives of seven men, besides a large loss of property. Another point: Do not use a machine in which particles can get caught, for they are liable to ignite if held in contact with a heated surface for any length of time. Do not use a dryer whose rated capacity is just enough to supply your needs. Better with this, as with all other machinery, to have it large enough to be able to do a little more than to be obliged to force things on regular work.

Still another point: It is never safe to pass the products of combustion through the drying coal. With some coal it might be done, and, in fact, has been done with coal of 54 per cent. volatility. It is best, however, to stay on the safe side and not sacrifice safety for efficiency.

It is generally safe to estimate on evaporating from six to eight pounds of moisture to one pound of coal or its equivalent used for fuel.

I have heard of evaporating as high as twelve pounds of moisture with one pound of coal, but I have the best of reasons to doubt it.

It is difficult to tell at just what temperature coal will begin to give off gas,

ing Congress, this paper may seem a little out of place, but I assure you that there are many minerals besides gold and silver that demand the attention of the ablest men of our country.

We are told by good authority that the Black Hills are rich in graphite, mica, fuller's earth, marls and other similar minerals; in fact, I was told by one of your miners yesterday that he could mine and deliver on cars here graphite of a good quality at \$3.50 a ton. Now I am not a promoter, but if I had a mine of graphite from which I could mine and deliver on cars here graphite of a good quality at \$3.50 a ton in carload lots I do not think I should look much longer for a gold mine.

Secretary Long wants this graphite to paint our war vessels, and others want it, and it has a ready market value—in other words, you can sell it. The same may be said of mica. The large electric and wallpaper manufacturers in the East want it, and will give a good price for it. And the same of fuller's earth. The Armours, the Swifts and other large packing concerns, the Standard Oil Co. and other companies want it.

TO MAKE PORTLAND CEMENT.

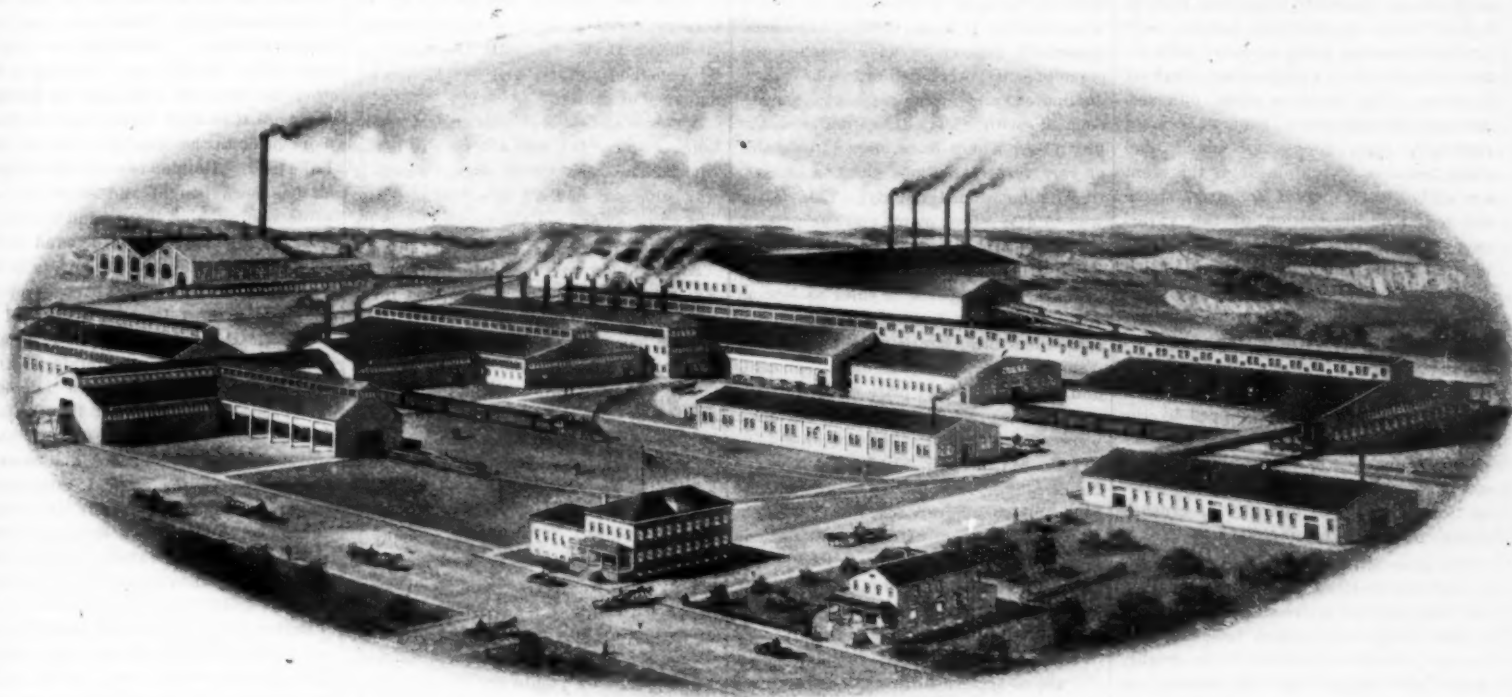
A Million-Dollar Plant Completed in Georgia.

[Special Cor. Manufacturers' Record.]

Atlanta, Ga., October 27.

The putting into operation of the Southern States Portland Cement Co. at Rockmart, Ga., will mark the establishment of an entirely new branch of manufacture in this portion of the South. It will also be the commencement of one of the most important industrial enterprises in the Southern States.

The heretofore undiscovered uses which are almost daily uncovered are so many that it is safe to say that Portland cement will soon be the most popular building material known. The growth of the industry in this country has been marvelous, the statistics showing a steady increase in the consumption of this article from 229,000 barrels in 1880 to over 18,000,000 in 1902. Up to a few years ago almost the entire bulk of Portland cement made in the United States was produced in Pennsylvania, and prior to that it was all imported. Other sections, especially Pennsylvania, got an earlier start in



PLANT OF THE SOUTHERN STATES PORTLAND CEMENT CO., ROCKMART, GA.

put into the storage bins, and have seen water run in a stream from the hopper.

From the best determination we have been able to make it seems that the coal in which the ash is composed largely of silica will give up its moisture easily and thoroughly, while that in which the ash is high in lime or clay is not very difficult to dry, and the moisture really has to be sweated out.

It is very important that coal be handled in such a way that warm air in large quantities can be brought in contact with every particle of it and can be made to absorb the moisture and carry it off as fast as it is released. This is best accomplished by passing the currents of air from the dried material through that which is wet. Furthermore, the currents of air should be subject to regulation in order that the heat will not become so intense as to release any of the volatile matter.

There is no question but what there is always a certain amount of risk in drying coal, but this can be reduced to minimum by using the proper precautions. The first and greatest precaution is not to get the idea that "any old thing" is good enough to dry coal. One notable experiment of this kind in the East during the

and indeed this point varies with different coal, but it is generally safe to say that it can be delivered from the dryer at about 150 degrees Fahrenheit without loss of gas. We have been asked to discharge at 225 degrees, and have found that this can be done, but not without loss of a small percentage of gas, and this cannot be recommended as good practice.

It is necessary to use a fan-blast to get sufficient air to carry off the moisture, and this will carry the dust produced by crushing with it. The dust amounts to from 3 to 5 per cent. of the total amount, and is worth saving. This is accomplished by placing the fan-blast above the receiving hopper, using suction on the cylinder and forcing the dust and moisture into a settling chamber made of non-conducting material, preferably brick. The wall of this chamber will retain sufficient heat to prevent the moisture from condensing, and should be large enough to allow the dust to settle. The bottom of the settling chamber should slant at least 45 degrees to the center, which will cause the dust to slide to the middle, where it can be carried off either by screw or chain conveyor.

Now, gentlemen of the American Min-

We have been told by some of the speakers before this congress of the great importance of building mountain roads. There is nothing more essential to this than Portland cement. Take these marls and make them up into cement and use it in building these roads.

Tennessee River Improvement.

Tennessee, Georgia, Alabama, Mississippi and Kentucky were represented at the convention held last week at Chattanooga for the improvement of the Tennessee river. It elected Messrs. Thomas R. Roulhac of Sheffield, Ala., president; C. W. Holbrook of Chattanooga, secretary; J. A. Patten of Chattanooga, treasurer; Gen. J. T. Wilder of Knoxville, first vice-president, with other vice-presidents from cities in Alabama, Kentucky, Missouri, Indiana, Ohio and other States. A memorial to Congress was adopted asking appropriations that will insure navigation from Paducah, Ky., to Leadvale, above Knoxville, Tenn., during the whole year, urging the completion of the work at Colbert Shoals, and that especially the mountain section below Chattanooga be placed on a continuous contract system at once.

this line than the South, but now the growth of consumption naturally brings this section to the front.

Portland cement is a subject of a heavy freight rate compared with its value, and its use has been largely restricted in many sections of the United States for this reason, the freight charges in many instances amounting to more than the cost of the product at the mills. This condition obtained more particularly in the Southern States, and was the direct cause of the building of the large plant at Rockmart, Ga., where up to this time no Portland cement was manufactured within the territory of eight of the great Southeastern States.

The discovery of extensive deposits of material consisting of limestone or cement rock and slate or shale, from which a high grade of Portland cement can be produced, in Polk county, Georgia, led to the formation of the Southern States Portland Cement Co. and the building of its extensive plant at Rockmart, Ga. The company secured about 400 acres of the deposits of this material, an amount sufficient to supply its plant to its full capacity for more than 100 years.

The plant is located in a most beautiful

valley of the North Georgia region, both walls of its enclosure being a solid bed of cement material of superior quality. Spur tracks have been put in by the railroads, forming sidings that convey the raw material to the plant from both walls of the valley. This is done by means of dump-cars drawn by small locomotives built for and owned by the company. The power-house is a model of convenience, with boilers of 3000 horse-power. The engine-room contains two large standard engines of 2000 horse-power, one Harrisburg engine and one air compressor, all made by the leading manufacturers of the country. The plant throughout is lighted and operated by electricity, the electric system being of the latest and most approved character.

A distinctive feature of superiority of this great plant is that every machine has its own operating motor, so that an accident to one would not interfere with the operation of the others. The most interesting feature, perhaps, is that all of the foundations of engines and machinery are made of Portland cement, demonstrating the practical value of the company's product for this purpose. The company has an extensive laboratory built of hollow blocks of Portland cement built by the Normandy block machine, with cement floors, and is a magnificent fireproof building. The machine shop, oilhouse, dynamite-storage room, hoppers, cement reservoir, bins, conveyor tunnels and other features of equipment of the plant are all built of concrete, and are a splendid practical illustration of the varied uses to which that valuable material can be put. The company's idea in using Portland cement for this purpose was not only to build its plant in superior form, but to illustrate the practical value of Portland cement as a building material.

The crushing plant is equipped by the best make crushers, and has a capacity considerably greater than is required for a cement mill, as the company proposes to turn out a large quantity of crushed stone for various commercial uses.

The process of making Portland cement is quite interesting. From the crushers the raw material is passed through dryers to the Krupp mills and to tube mills for further reduction, where it is thoroughly mixed and put through the rotaries, of which there are eight, where it is subjected to a great heat necessary to reduce it to a clinker. This clinker is then conveyed to the clinker-storage building, and after cooling is reduced to a very fine powder, known to the world as Portland cement.

It is altogether likely that no Portland cement plant does away with hand labor in handling its product to the extent that this one does. The raw material is loaded into cars at the quarry, and is not again touched by the hands of men until it is sacked for shipping.

The coal necessary for this plant is enormous, and here again the company exercises the principles of economy by having the coal unloaded and conveyed to the rotaries by an automatic device that does away entirely with hand labor.

The company has built a handsome hotel near the plant to accommodate its employees, together with a collection of neat cottages. About 300 men have been employed since January 1 on construction, and the regular operating force will be about 200.

The importance of this plant to the section of Georgia which it occupies can be well understood when it is stated that the location which it occupies was on January 1 last a hillside cotton field. This old cotton field is now adorned by an industrial plant costing more than \$1,000,000

and containing acres of handsome houses. Some idea of the magnitude of the plant can be gained from the amount of freight paid on construction material and machinery, amounting to more than \$50,000, which was divided between the Seaboard Air Line and Southern Railroad, both of which have side tracks running to the plant.

The company is now ready to receive orders for its products, and is already furnishing cement for several important constructions. The company has its main office in Atlanta, Ga.

The erection and successful operation of this plant means another important addition to the great and steadily increasing manufacturing interests of the Southern States. LEE J. LANGLEY.

NEARING EXPORT TRADE.

Condition in the Birmingham Iron Market.

[Special Cor. Manufacturers' Record.] Birmingham, Ala., October 26.

About the same condition of affairs as to the price of iron exists that was reported last week. In the number of orders there was an increase, and the volume of business successfully concluded was greater. It must, though, have been materially greater to have reached the stage of activity. Small orders have predominated, and in the majority of cases coupled with the admonition to ship promptly. There have been a few sales of very respectable lots, and one of 5000 tons is mentioned quietly. This latter was to a Western point, and the price is a matter of speculation. Shrewd guessers name \$10 as the price paid.

There were reports of sales as low as \$9.75, but they lack confirmation. In some cases these figures were obtained by deducting the commission of 2½ per cent. and reporting the net price to the furnace as the sales price. During the week there were sales of iron on the basis of \$11.50, \$11.25, \$11, \$10.75, \$10.50 and \$10 for No. 2 foundry. Some No. 2 soft sold at \$11, and some gray forge at \$9, while \$9.80 cash was refused for 600 tons of No. 3 foundry. The demand was principally for foundry grades, with a fair sprinkling for the other grades. The condition of the market tempted the presence of some important buyers, prepared, with the aid of spot cash, to pick up any bargains that were offering, but they found conditions represented to them were greatly exaggerated, and did not invest. But they were imbued with the idea that in a short time they would be able to supply their needs at the prices they were now bidding, say \$9 to \$9.50 for No. 2 foundry. If the market goes that low it will put more than one furnace stack out of commission. At \$10 for that grade we are on the border line of the cost of making iron, and any further attempt to reduce values will be met with strenuous opposition.

The prices reported show considerable irregularity in the market, which at the close of the week developed a better tone, due to the increased business. Some interests show up very fairly as to prices. On sales of 6000 tons during the last ten days by one interest the average price obtained was \$10.50. Another interest, whose sales amounted to 16,000 tons, obtained the same average price. These are cited to refute the tales of demoralization circulated by sensational mongers. To sum up the situation, the sales of material lots of iron the past week were on a basis ranging from \$10 to \$10.50. On small lots the price ranged from \$10.50 to \$11.50.

We now have the prospect of diminished output ahead of us, and until conditions change there will be no manifesta-

tion of haste in putting again into commission the furnaces now out and that soon will be out. The aggregate will be mighty close to a third of our furnace capacity.

As to the export business, nothing has been developed as yet. Efforts are yet being made to resurrect it. It requires only a comparatively small concession on the part of each (seller and buyer) to bring it about. Each side now is playing to induce the other side to take the initiative in making it. It is a question of only a short time when the business will be a prominent feature of the market.

The disagreement between the rolling mills and the plate and sheet men has been settled after a session that extended over the whole of the past week. A reduction of twelve and one-half cents from last year's scale was decided upon. The molders' strike was settled some time ago, and we are now free from all disturbances of this kind.

The Pennsylvania people who some time ago bought the Palos coal mines, in Walker county, have taken possession of the property, and will develop it without delay to its full capacity. It is capitalized at \$150,000, and the officers are G. C. Daner, president; J. P. Rothermiel, vice-president; D. W. Graybill, treasurer; A. S. Siedell, secretary, and W. E. Leake, manager of mines.

A new coal field will soon attract attention, as one of the seams it carries is the well-known Blue Creek seam, which it was supposed had all been rounded up. The owners have not yet decided upon its disposition.

A new industry, to be known as the American Casting Co., has applied for a charter. It is capitalized at \$20,000, and will be located at East Birmingham. A foundry 50x150 feet and a machine shop 60x80 feet and other buildings will be erected at once. They will manufacture hardware specialties, such as flange couplings, screw packs, tapers, irons, well pulleys, blind hangers and all kinds of small castings. The officers are Geo. H. Harris, president; H. V. Dimmick, vice-president; D. H. Dimmick, general manager, and J. E. Dow, secretary and treasurer.

The Pittsburg & Southern Coal Co. is preparing for a vigorous prosecution of business at Mississippi river points from which Pittsburg points are barred by the low water in that river. The only drawback to a large trade in that section will be the difficulty of obtaining cars. While the trouble is not yet acute, the situation is gradually hardening. The Louisville & Nashville Railroad is now robbing its construction trains of their engines to aid in moving the freight that is accumulating on its main lines, although it has added 4000 cars to its freight equipment in the last year. Its business so far this month is the largest for any corresponding period in its history. Other roads are fearing or anticipating a similar difficulty. The report of the car-service association for this month will show the largest business for any one month in its history. There has been of late some slackening off in the new business offering to the various shops, but so far there has been plenty of work on uncompleted contracts to keep them going, and for the remainder of the year, anyway, they will be running with full force. There is yet a good deal of complaint about scarcity of labor. This is particularly the case with railroad contractors, whose operations are greatly retarded from this cause.

A coliseum building is now in contemplation, with every prospect favoring its erection. A new daily morning newspaper is also on the tapis. Affairs yet have an optimistic outlook, based on our steady and continuous growth. J. M. K.

THE TEXAS OIL FIELD.

The Question of Prices for the Small Producers.

[Special Cor. Manufacturers' Record.] Beaumont, Texas, October 24.

Small producers in the Sour Lake oil field are endeavoring to account for a further decline in the current price of oil, and there is much talk of an unholy alliance between the big buyers, formed for the express purpose of squeezing the "little fellow" and getting the product of his well at a figure below its actual value. Yet if the "little fellow" will look closely into his own case he will find that he himself is more to blame for the depressed market than the large companies which are purchasing his oil at twenty-five cents a barrel, for, being without storage or other facilities, he must, of necessity, sell his oil as it is produced, and it is only natural that the buyers will get it as cheaply as they can. There will never be a successful combination of producers where there are so many wells on limited acreage, because some of the well-owners will always be willing to cut the price to make a sale, and the agents of the buyers are ever on the lookout for the man who is anxious to sell. Producers with adequate storage or facilities for getting their oil to market are obtaining a fair price for their oil, although the figure is not more than half what it was in Beaumont prior to the opening up of the Sour Lake field. An immense amount of cheap oil has been bought and stored by consumers throughout Texas and Louisiana, the result being that the demand is considerably lessened and the buying is confined principally to the Texas Company, the J. M. Guffey Petroleum Co. and the Southern Pacific Company. If production at Sour Lake is maintained at the present rate for another two months, it is reasonably certain that the Southern Pacific will have its 2,000,000 barrels of storage pretty well filled. The company will then buy for current consumption only. The Texas Company and Guffey Company, however, will continue to be in the market as heretofore, although both companies have a large supply of oil in tanks.

Better prices on current purchases will be the logical result of the completion of the two new pipe lines to Beaumont, which are to be operated by the Security Oil Co. and the United Oil & Pipe Line Co. These lines—the Security being an eight-inch and the United a six-inch—are about ready for business, and when completed they will afford an outlet for 30,000 barrels of oil daily. From 20,000 to 25,000 barrels a day are now going through the Texas and Guffey lines to Beaumont, and about the same amount is being shipped by rail. As the Sour Lake field is producing not more than 50,000 barrels daily, the Security and United companies will have to cut into the market rather deeply if they desire to keep their lines busy. This, it is thought, will be the biggest factor in elevating prices. However, it will be some time before the small producer who wishes to sell the output of his well daily will realize a price that is entirely satisfactory to him.

A decided advance in the market is predicted for January unless Saratoga develops some large wells. The Guffey pipe line from that field to Sour Lake will shortly be completed, and work is progressing on the Texas Company's line. The Santa Fe, too, will be operating trains into Saratoga by the first of the year if present plans are carried out, and if the field proves as large as some expect it to be there may be a continuance of low prices. Rumors of a dividend of 10 or 20 per cent. by one of the large companies

are going the rounds. It is said that the company in question is earning at the rate of \$200,000 a month, and this is regarded as a reasonable figure, considering the amount of oil being handled by the company. Confirmation of the reports is lacking, but it would not be surprising to hear that the directors had decided upon such action. The payment of a 20 per cent. dividend by the company in point would mean the disbursement of \$600,000, and with money as tight as it is now, that portion of the amount which would go to local shareholders would put a sum in circulation sufficient to ease matters here to a great extent.

HOLLAND S. REAVIS.

RAILROADS AND LEVEES.

Their Relation in the Mississippi Valley.

In a letter to Mr. J. N. Luce, chairman of the executive committee of the Mississippi River Improvement Convention at New Orleans, Mr. George J. Gould wrote as follows:

"Your convention to be held in New Orleans on the 27th is a very important event for the entire Mississippi valley and all the great and diversified interests therein, and I hope the views and plans for levee protection that will be formulated will be so desirable to all interests, including those of your great city, that they will commend themselves to the public at large and to the Congress of the United States, where it is hoped liberal appropriations will be provided.

"The railroad interests I am connected with have under way and partially completed a low-grade line of road from East St. Louis to New Orleans, crossing the Mississippi river on a great bridge at Thebes, Ill. When this line is completed it will be a water-grade line paralleling the Mississippi and opening up virgin forests upon its west bank, and, in addition, it will make accessible great areas of farming lands susceptible of a high degree of cultivation if safe from inundation. We are also, at great expense, rebuilding the railroad between Little Rock, Ark., and Coffeeville, Mo., and are constructing a new low-grade line of railroad in the White River valley to connect our Kansas City lines with the main line of the Iron Mountain road.

"All of this, with necessary expenditure for equipment and other railroad appurtenances, will amount to from \$40,000,000 to \$50,000,000, and the work has been under way two or three years, with the belief on our part that this great investment, the bulk of which will be in the Mississippi valley, will be protected from damage by floods and inundations.

"The completion of our plans hereinabove outlined will inure greatly to the benefit of the city of New Orleans and largely add to her maritime trade."

At Mammoth Springs.

[Special Cor. Manufacturers' Record.]
Mammoth Springs, Ark., October 23.

United States government has just purchased land at this place to establish a fish hatchery at a cost of \$25,000.

The merchants of this city are building a steel bridge across the river east of here.

We will probably have the cotton mill running before the next crop is gathered. Mr. R. L. Steele of Rockingham, N. C., is the owner of the mill building.

Rice-growers of Texas will meet at Houston on November 5 to perfect an organization to be known as the Rice-Growers' Association of Texas. The organization will be charged with the consideration of such matters as contracts between canal owners and producers, water rents, land rents, milling charges, etc.

THE ARGENTINE REPUBLIC.

Its Opportunities as a Market for American Products.

Editor Manufacturers' Record:

I do not think that I can better convey to your readers an idea of what these South American countries are as a market than by giving a few figures, which will mean more to the business man than many pages of description. The Argentine Republic lies between latitude 22 degrees and 52 degrees, and consequently has a great variety of climate. It consists of 1,500,000 square miles of territory, and has a population of about 5,000,000 inhabitants. The Southern provinces are one vast plain, on which are pastured some 80,000,000 sheep and 10,000,000 cattle. In these provinces there are also under cultivation 16,000,000 acres of land, sown principally with wheat, maize, linseed and alfalfa. In the Northern provinces are vast mineral deposits waiting for men and capital to develop them, and where the production of tobacco, sugar and wine is carried on to a very considerable extent, besides many other products which are produced on a smaller scale, and which can with the necessary capital and enterprise be enormously extended. The exports for the last fiscal year were about \$180,000,000, the imports \$110,000,000. There are in the country 11,000 miles of railway and 35,000 miles of telegraphs. The tonnage entered during the year was 4,000,000 tons; the revenue is \$100,000,000, the public debt is between \$300,000,000 and \$400,000,000, foreign capital invested in banks, railways, tramways, etc., \$1,000,000,000. The railways pay from 5 to 7 per cent. dividend and the banks from 5 to 20 per cent. The city of Buenos Ayres, the capital of the republic, contains about 900,000 inhabitants, and in regard to all the conveniences of civilized life is as well provided as any of the great cities of the world. I will only give in detail two of the above items as being those which bear most directly on my subject, i. e., imports and exports:

IMPORTS.		Value.
Alimentary substances.....	1,000,000	\$8,000,000
Textile fabrics.....	644,908	38,000,000
Mineral, volatile and medicinal oils.....	340,937	3,500,000
Chemical substances.....	197,936	3,500,000
Paper.....	150,091	8,000,000
Woods.....	245,723	18,000,000
Iron.....	9,069	2,500,000
Other metals.....	41,694	1,000,000
Stone, earthenware crystals and ceramic products.....		11,000,000
Other articles.....		14,500,000
Total.....		\$110,000,000

EXPORTS.		Tons.	Value.
Maize.....	1,000,000	1,000,000	\$24,000,000
Wheat.....	644,908	644,908	18,500,000
Linseed.....	340,937	340,937	18,000,000
Wool.....	197,936	197,936	45,500,000
Frozen beef and mutton.....	150,091	150,091	13,500,000
Quebracho logs.....	245,723	245,723	2,500,000
Quebracho extract.....	9,069	9,069	1,000,000
Sugar.....	41,694	41,694	3,500,000
Other products.....			53,500,000
Total value.....			\$180,000,000

Of the imports about 13 per cent. are from the United States. Of the \$38,000,000 of textile fabrics I have no exact figures, but I am quite sure that not \$1,000,000 worth are from there.

As far as figures will help your readers to form an opinion, I think the foregoing show that there is a considerable volume of business done here in the course of a year. I would call particular attention to the item "Textile Fabrics." Surely if your manufacturers can sell on equal terms with England, France or Germany, they ought to get some of these \$38,000,000.

Although the area of this country is so great and the population so comparatively small that the latter is necessarily much scattered, still there is a large proportion settled in the towns and villages. The number of these has increased very much during the last few years, owing greatly to the enormous development in grain production. In almost the smallest of these

towns will be found churches, schools, social and political clubs, cafes, billiard saloons, and in the larger towns theaters and public libraries, showing that these people make full use of as many of the advantages of civilization as come within their reach, and it should be worth while looking after as purchasers of the multitudinous articles which that civilization has called forth. In many of the "adobe" cottages away out in a "Pampa" village are to be found American sewing machines of the latest types, and if these why not many other useful and saleable articles.

The people here are in general very careless of their machines, tools and other accessories used in their various callings, with the result that these have continually to be replaced either wholly or in part, and this to an extent which an American cannot even imagine. In the country districts, the farmers being mostly tenants and not owners of their farms, go to little expense in farm buildings. I have often seen a new reaper, after cutting one season's grain, left out at the mercy of the elements till it should be required eleven months later to cut the following year's crop. Nor is it much better amongst many of the small manufacturers in the towns, who are mostly Italian or Spanish mechanics, and who know little about the care of first-rate tools or machinery, and yet these people, when they can afford it, will pay high prices for and insist on having the latest types of machines. Not a month ago I saw in the yard of a scale-maker a beautiful, almost new railway platform scale. The box was full of water and the small inside pieces were completely rusted. I was told that it was there for some slight repair. Being in the yard some days later, it was still in the same place, exposed to the sun and rain. I know this country thoroughly, and I positively state that these cases are by no means exaggerated or exceptional. The same kind of thing is almost invariably the rule. It certainly does not speak very well for the thriftiness of these people, but it cannot fail to swell the sales of the manufacturer who sends his goods to this market.

Many articles are made here, but they are not generally of such a quality as to seriously compete with the imported article, and even if in some cases they do replace the latter, the manufacture of them creates a market for machinery of a class which will not be made here for a long time to come. It is estimated that there are about 12,000 factories of different kinds in this country, and as some of them are of considerable capacity, it means, of course, that there must be a continual demand for machinery. There are about 700 flour mills, for instance, which are estimated to be worth about \$40,000,000.

A start has also been made in the production of certain substances in the Northern provinces, and the results have so far been very satisfactory. Amongst these are rice, ramie, jute, and, more important still, cotton. This latter is even now being exported on a small scale, and I learn that the yield here is much greater per acre than in the United States, India or even Egypt. All this points to a great development in the future, and must create a considerable market for the implements necessary for their cultivation and the machinery for their manufacture.

As this republic has now definitely arranged all the questions which were pending with its neighbors respecting their different boundary lines, the danger of war from this cause has disappeared, and I see no reason to doubt that we have entered on what will prove to be a long period of peace. The probability of inter-

tine struggles has also greatly diminished during the past few years, due partly to the strong public feeling against them, which is making itself more felt every day, and partly to the fact that the government is now better able to uphold its authority than it has been heretofore.

It is true that the government of this country leaves much to be desired in its administration of several departments which are intimately related with commercial operation, notably the currency, the custom-house and shipping regulations, the administration of justice, etc., and commerce is considerably hampered by governmental action (and inaction) in many ways. Still, as foreign merchants and foreign capital are getting to have more and more influence every day, there is a strongly increasing current of opinion bearing on reform which is making itself felt and which this government cannot well ignore, and I think that there is every reason to hope that these objectionable conditions will before long be greatly reformed. It must be borne in mind also that any difficulties which may exist do not operate specially against American trade.

I have said nothing as yet about the adjacent countries. These are Chili, Bolivia, Paraguay, Brazil and Uruguay. The only figures which I will inflict on your readers relate to the extent of all these countries, including this republic, which is about 5,500,000 square miles, and the population, which is some thirty-odd million souls. As these countries are all inhabited by people of the same races, who speak the same language, have much the same customs and are more or less engaged in the same classes of occupation, and who are very similar in their political institutions and degree of civilization, it will be easily understood that business is carried on in all of them under pretty much the same conditions and that their wants are very similar in many respects. The road to these markets is through this republic, and anyone who entertains the idea of cultivating them would do well to establish his headquarters in this city, as with comparatively little more trouble and expense he could extend his operations to all the territory mentioned. The following facts will bear out what I have just written, and will show the relative position of the other countries mentioned with regard to this republic:

Chili.—Buenos Ayres is within three days' journey of Santiago, the capital of Chili, and there are mails every day. As soon as the Transandine Railway is finished we shall be within twenty-four hours by rail of that city.

Bolivia.—An extension of the railways in the north of this republic is already being built to connect us with that country, and when finished will bring us within about three days' journey of the capital by rail. The river Paraguay, of which the Parana is a continuation, has its source far up in Bolivia. It is of some volume before it leaves Bolivian territory, and there is no doubt that as a means of communication it will be much developed in the near future. It is already used to some extent, but it is a difficult and expensive route at present, owing to the obstacles which render necessary frequent transshipment. As soon as we are more in touch with that country this naturally fine waterway will be perfected and the existent obstacles overcome. The government of this country is building the railway extension to Bolivia with the express purpose of getting their trade to pass through us, and in the course of a very few years all the Bolivian foreign trade will inevitably do so.

Paraguay.—Asuncion, the capital, is

four days' journey by river steamer from this city, and there are steamers leaving almost every day. Nearly all the foreign trade of that country is carried on through this city.

Uruguay.—Montevideo, the capital, is only a few hours' steaming from this city, and any part of that republic is only a few hours' or at most a day's journey from its capital. The two cities are intimately connected commercially.

Brazil.—Perhaps I should not include Brazil in the territory I am treating about, but owing to its proximity to this city, business could be successfully carried on there under Buenos Ayres' control, although goods would not come here. The means of communication are very convenient, and we are only four days by steamer from Rio, the capital. It is true that the language and the customs of the people are somewhat different to what they are in the other countries treated of, but I consider that Brazil practically forms part of the same market with them. This country is by far the largest and richest of the lot, although the Argentine Republic must be considered as much more advanced in many ways.

I cannot better conclude these remarks than by quoting an independent opinion on the same subject, Mr. Frank M. Bicknell, who was commissioned by Secretary Wilson, and who spent nearly two years in this country in order to study and report on its commercial, stock-raising and agricultural conditions, says:

"There is no reason why, with better transportation facilities and banking, the United States should not sell South America practically all the farm machinery used. The same statement applies to many other manufactured goods. The market is there, but the goods are not. The government and the people of the Argentine have the most friendly feeling toward the United States. * * * The Argentine stands with arms outstretched to welcome American capital and enterprise, and will do the right thing by us if we will do the right thing by him. Enormous profits await the investment of American capital in this vigorous young republic in the South, but it is idle to undertake ventures there upon any other than a large scale, protected by ample capital, after the most ample investigation. * * * Argentine is a great country, and its people are advancing rapidly."

There are two points in the above with which I do not agree. The first is that "it is idle to undertake ventures upon any other than a large scale." The person who contemplates an attempt on these markets can make it on an exceedingly small scale, nor is it by any means necessary to send large quantities of goods here, nor go to any extraordinary outlay, at any rate, until one is positively assured of the success of the first attempt. The second point with which I disagree is that which refers to "ample capital," as it seems to infer that a large capital is indispensable, but this is really not the case. Our banks here are very liberal in assisting all legitimate ventures, particularly those leading toward new channels for trade, and as I presume that the financial institutions on your side are equally liberal, the "venturer" would really require to put very little capital outside of his responsibility. However, in a future article I will treat more fully on these points, as well as on the most promising lines of American goods which it would be wise at the present time to endeavor to push in this market.

ARTHUR R. BRASHEE.

Buenos Ayres, August 20.

J. P. Nelson of San Antonio has been awarded a contract of \$484,000 to build seventeen macadamized roads radiating

from San Antonio toward the county boundaries.

THE MISSISSIPPI LEVEES.

Improvement of the River a Great National Problem.

[Special Dispatch to Manufacturers' Record.]
New Orleans, La., October 28.

Twenty-four States have representation at the Interstate Mississippi River Improvement and Levee Association Convention, which is holding a three days' session here, and the 1500 delegates include not only United States senators, congressmen and governors of States, but a large number of the representative men of affairs from the States of the Mississippi valley and beyond. In the standing of those present, as well as in the broad scope of the meeting's objects, it is remarked that no stronger assemblage or more important convention has ever been held in New Orleans. The character of the addresses made and the range of the topics discussed give the convention a national significance, and make the improvement of the Mississippi river a question of greater importance to the whole country than it has ever before been accredited with. As a result of the speeches here made, the facts here presented and the line of action here determined on, the perfection of the levee system for the Mississippi river from Cape Girardeau to the Delta will henceforth be vigorously urged on the national government as a public work in which the whole nation has a vital interest, and should by right help bear the burden of the cost.

The Mississippi river, it is pointed out, is the great artery of the territory between the Alleghanies and the Rocky mountains from the British possessions to the Gulf, a section greater in area than Germany, Great Britain and a half-dozen other countries of the Old World combined, while in fertility and possibilities of development it is a section unequaled on the globe. The welfare of the river valley, where the soil is of unparalleled richness, is a matter of even greater importance to the nation at large than the reclamation and irrigation of the arid lands of the West, so the convention holds, and a telegram from the White House to the convention officers showed that President Roosevelt takes as keen interest in government protection by levees here as he has shown in government aid to irrigation in the West. This is taken to mean that the President will look with favor on the congressional legislation that will be urged without delay.

Heretofore the large part of the expense of maintaining the levees has been born by individual States and immediately contiguous land-owners. The comparatively small loss resulting from the unusually high water of last spring has established the vast importance and great benefits of the levees, and the proposition now is for the United States government to take the entire work in charge and complete such a comprehensive system of levees as will render destructive overflows an impossibility. One point very strikingly presented in a number of addresses was that the convention regarded the improvement of the entire Mississippi and its tributaries as a part of the work to be pressed upon Congress. While the lower Mississippi needs broad national work in the development of the levees, the Ohio and other tributary streams need the deepening of channels and the removal of the obstructions, all of which was regarded as an essential factor in the whole problem of making the Mississippi and its tributaries a great highway of commerce on one hand and of preventing the damage from overflowing on the other hand.

ALBERT PHENIX.

The Mineral Industry.

The Mineral Industry: Its Statistics, Technology and Trade for 1902. Edited by Joseph Struthers. Published by the Engineering and Mining Journal, New York and London.

This is the eleventh volume of the standard publication founded by the late Richard P. Rothwell and maintained at its high position during the past two or three years, since Mr. Rothwell's death, by Joseph Struthers, Ph. D. Bringing the statistics down to the end of 1902, the volume shows that the total value at the place of production of the mineral and metal output, both from domestic and foreign ores, and bullion of the United States during 1902 was \$1,431,072,789, as compared with \$1,367,983,548 in the preceding year, a gain of \$63,089,241. It shows that of these vast sums, unprecedented in the history of the mineral industry, ores and minerals contributed \$758,562,272 in 1902 and \$721,938,333 in 1901; metals, \$510,553,421 in 1902 and \$486,981,619 in 1901; secondary products, \$84,088,884 in 1902 and \$72,935,106 in 1901, while the value of metals smelted or refined from foreign material was \$77,268,212 in 1902 and \$86,128,490 in 1901. In these gross totals of value it is pointed out, are included in certain duplications, such as those of the manganese and iron ore used in making ferromanganese and pig-iron, bauxite used in making aluminum and alum, coal used in making coke, lead used in making white and red lead, and litharge and a few others, the whole amounting in 1902 to \$115,644,546 and in 1901 to \$93,629,061. Deducting these amounts and also the value of the crude foreign ores or metals smelted or refined here, the net value of the mineral industry of the United States was \$1,238,160,031 in 1902 and \$1,118,225,997 in 1901.

In the preparation of this volume, in which are revised in the light of later and more minute investigation, and in accordance with the practice of the publishers, the figures of the preceding year, many thousands of producers have co-operated in furnishing statistics of their output, as well as many other persons prominent in various branches of the industry who have given special information. Valuable assistance also has been obtained from the officials of many railways in the United States and Mexico, from the State geologists, commissioners of mines and inspectors of mines in most of the States of the Union, from officials of the United States government at home and abroad and from the statisticians of foreign countries, who have furnished copies of their latest publications, often in manuscript.

Among the special contributors are Philip Argall, William Campbell, James Douglas, Alan W. Dow, Paul Dvorkovitz, Edwin C. Eckel, F. J. Falding, Henry Fisher, Samuel S. Fowler, Chas. H. Fulton, W. H. Hammon, Frederick A. M. Hobart, H. O. Hoffman, W. J. Huddle, Walter B. Ingalls, James F. Hemp, John B. C. Kershaw, Frederick H. Lewis, James W. Malcolmson, John A. Mathews, Parker C. McIlhenny, Chas. F. McKenna, C. G. Memminger, David H. Newland, Frank Nicholson, J. Obalski, Frederick D. Powers, Edwin C. Reybold, Jr., Robert H. Richards, Thomas Rickard, Heinrich Ries, Aguste J. Rossi, Samuel Sanford, Frederick Schniewind, Vincente Spirek, Joseph Struthers, Titus Ulke and Walter Harvey Weed.

In addition to chapters dealing with special mineral products, there are chapters on the progress in electro-chemistry and electro-metallurgy, on the literature of ore deposits, on ore-dressing, on the progress of metallography, on alloy steels, on

pyritic smelting, on progress in the manufacture and use of titanium and similar alloys, on the concentration of ores by oil, on the sampling and estimation of ore in a mine, on the mining-stock exchanges in 1902, with a general summary of the import duties of the principal countries of the world and mineral statistics of foreign countries.

Rice Kitchen at St. Louis.

The Rice Association of America, as a part of its campaign for the promotion of the use of rice, will erect a rice kitchen at the St. Louis Exposition. The building will cover an area 100 feet front by 80 feet deep and it will have a height of 30 feet. Planned by S. G. Del'Isle of St. Louis, the building will have a main dining-hall, demonstrating-room, ladies' parlor, manager's office, kitchen proper, storeroom, porches and lavatorial conveniences. Mr. S. L. Breaux of New Orleans, first vice-president of the association, in a letter to the Manufacturers' Record says:

"The purpose of the establishment of this kitchen is not to make money; in fact, the association contemplates the expenditure of some \$20,000. What we want to do is to teach people how to cook rice and acquaint them generally with its desirability as a food product. We do this by serving a meal, for which a nominal charge is made, between the hours of 11 A. M. and 2.30 P. M. each day. There will be no dish served, however, in which rice or some of its components does not enter in the composition thereof. Between the hours of 3 and 4 every afternoon there will be practical demonstrations and cooking by our lady demonstrators."

Machinery for Spain.

Jackson & Phillips, Ltd., Conde de Aranda 1, Madrid, Spain, writes to the Manufacturers' Record as follows:

"Electrical machinery for tramways, electric-light plants—in fact, high-class machinery of all kinds—can find a market in this country, but only if conditions of payment are such as users are in the habit of obtaining. There are many lines in which large business would result if American manufacturers would agree to the same terms of payment as those in force with other countries, viz: One-third on signing contract, one-third on shipment or arrival and one-third three months later. Take, for example, a large tender we have in hand at the present moment for a plant to turn out bolts and nuts in large quantities. We have received quotations from America in this connection, but the terms offered, viz. cash upon shipment, which means that the machinery is paid for two and one-half months before the purchaser sees it, place American tenders out of the market."

Etching Plates for Saws.

Information regarding any improved process for etching saws is wanted by the Southern Saw Works of Atlanta, Ga. This company writes the Manufacturers' Record that it is prepared to give orders for plates to any manufacturer that can offer a modern process for making quick and inexpensive transfers.

It is reported that the Louisville & Nashville's extension from the Knoxville, LaFollette & Jellico Railroad to Oliver Springs is intended to ultimately reach Harriman, Tenn. The Oliver Springs branch, it is said, is being constructed with a grade of three-quarters of 1 per cent., showing a desire to maintain a low grade for a mountainous section. The report is as yet unconfirmed.

RAILROADS.

[A complete record of all new railroad building in the South will be found in the Construction Department.]

B. L. WINCHELL'S RISE.

Career of the New Third Vice-President of the Rock Island.

[Special Cor. Manufacturers' Record.]
St. Louis, Mo., October 23.

Western railroad men are particularly interested in the rapid promotion which has come in recent years to B. L. Winchell, just made third vice-president of the Rock Island system. Mr. Winchell is still a young man for his achievements, and he is furthermore distinctly Western. He was born in Palmyra, Mo., in 1858, and his railroad career has all been on lines in the trans-Mississippi territory. Because he has gone to the very front place as a railroad man, this is the point that gives him especial interest to the Western railroad world.

Mr. Winchell began his railroad career as an office boy. This was in 1873 and in the office of the master mechanic of the Hannibal & St. Joe road at Hannibal. He was afterwards in the auditor's office, and in 1877-78 was at Atchison, Kans., as freight and ticket agent of the Atchison & Nebraska, at present a part of the Burlington system. Then he became connected with the Kansas City, Fort Scott & Memphis, and after being chief clerk to J. E. Lockwood, general passenger agent of the line, was assistant general passenger agent for fifteen years, from 1880 to 1895. Here he laid the foundations for the thorough knowledge of Western railroad conditions which has been his strong asset. In 1895 he was made general passenger agent of the Union Pacific, Denver & Gulf, and in 1898 he resigned to become general passenger agent of the Frisco road. This place he held six months, resigning to become vice-president and traffic manager of the Colorado Southern. October 15, 1900, he was made president and general manager of the Kansas City, Fort Scott & Memphis, the road with which, in a subordinate capacity, he had been associated most of his railroad life, and so conspicuously able had he shown himself to be in handling the affairs of that road that when the line was absorbed by the Frisco in the course of the ambitious operations carried out by President B. F. Yoakum Mr. Winchell was taken over as vice-president and general manager of the greatly aggrandized Frisco system. Three years, to a day, after his appointment as president of the old Fort Scott road his appointment as third vice-president of the Rock Island system was announced.

The official notification of this appointment fails to carry with it full intelligence to the layman of all the importance it denotes. Railroad men pronounce the office the greatest "plum" in the West, and hardly is it to be exceeded in desirability among railroad positions anywhere. It is stated that Mr. Winchell's new job will make him the executive head in the West of the Rock Island as well as Frisco systems; will give him control of the construction, operation and traffic of a system with 14,000 miles of road; will make him the highest Western railroad executive and will give him control of more miles of railroad and more men than any other railroad official in the country.

Mr. Winchell will continue as vice-president and general manager of the Frisco system, and will visit St. Louis frequently, although his new headquarters will be in Chicago. His conduct of his new position will be the subject of much interest to his friends in the West. He is a man who knows railroading most

thoroughly, a man with a remarkable memory, a capacity for work far out of the ordinary, and a mastery of detail seldom met with, so that his friends declare he has never held a position in which he did not prove himself to be just a little bigger than his job, and it is a subject of interesting speculation now as to what will be the ultimate position in which he will land. ALBERT PHENIS.

Cotton Belt's New Route.

With the completion of the St. Louis Valley Railroad between East St. Louis and Gray's Point, a distance of 130 miles, the St. Louis Southwestern Railroad (Cotton Belt) gets what it has long desired—an entrance into St. Louis over its own tracks. Heretofore the Cotton Belt has been dependent on the Iron Mountain road for an entrance into St. Louis, its own tracks terminating at Delta, and because of the vast amount of traffic, both freight and passenger, which the Iron Mountain has been called on to handle for some years, the Cotton Belt management was unable to secure the excellence of service desired and now assured under the new arrangement. Not only is the distance between St. Louis to the Southwest reduced by several miles, but the time is lessened and a much better route provided, and there will be a still further improvement when the new Thebes bridge is completed, as it will be during the next summer, and trains will be freed from the inconvenience and delay of ferryage across the Mississippi as at present.

The St. Louis Valley line was built by Col. S. W. Fordyce, formerly of the Cotton Belt road, and it was afterwards sold to George J. Gould, who has given the Cotton Belt trackage rights under a lease. It is a water-level line, with no grades exceeding fourteen feet to the mile, and has no sharp curves anywhere. It is laid with 85-pound steel rails, rock ballasted, and the speed limit possible is the very highest. It is proposed to use the line for practically all of the Gould freight traffic from the Southwest to the North and East via St. Louis, thus relieving the congestion in the yards and terminals at that city. Instead of bringing such traffic through St. Louis at all, it will be diverted to the Valley line and turned over to the Wabash at East St. Louis.

The New Washington Station.

It is now stated that D. H. Burnham & Co. of Chicago, the architects of the new union station in Washington, will be the general contractors for the work, and have awarded contracts as follows: The Thompson-Starrette Company, Chicago and New York, granite, brick and foundation work; American Bridge Co., iron work; McNulty, Chicago, ornamental iron work, and Vermont Marble Works, marble work.

The station building proper is to be of white granite 620 feet long and from 65 to 120 feet in height. The three entrance arches will be 50 feet high, and the general waiting-room will be 220 feet long by 130 feet wide and 90 feet high. Fifteen doors will lead into the train lobby, which will be 760 feet long by 130 feet wide. There will be twenty-nine tracks, eighteen of them on a level with the waiting-room floor and eleven depressed twenty feet below, six of the latter leading under the building into the tunnel, which will furnish the connection with the different lines to the South.

There will not be any large train shed, but sheds will be constructed for each platform, so as to overlap the trains and provide ample protection from the weather. There will not be any stairways in the station for the use of passengers, excepting those leading to the de-

pressed tracks. The upper floors of the building will be for the use of the station officers and the railway trainmen. The building will cost about \$4,250,000, but the entire improvement, including the elevated approach to the station and the tunnel, besides the changes of lines necessary, will be about \$14,000,000.

Pensacola, Alabama & Western.

The Pensacola, Alabama & Western Railroad Co. has given notice at Pensacola, Fla., that it will apply for a charter to build a line from Pensacola north to the Alabama State line, about forty-five miles. The incorporators are H. L. Covington, A. Greenhut, W. J. Forbes, A. M. Avery, H. H. Boyer, W. A. D'Alemberte, Morris Bear and John C. Avery, all of Pensacola.

Mr. Covington is president; Mr. Greenhut, vice-president; Mr. Forbes, secretary and treasurer. According to the declaration, the amount of stock held by each of the incorporators is two shares, and it is reported that the charter is to be obtained for the proposed Memphis & Gulf Railroad, which is to be built from Memphis, Tenn., to Pensacola, Fla., and in which Seely Dunn and others are interested. The company has applied for franchise privileges in the city of Pensacola.

Coal & Coke Railway.

The Coal & Coke Railway Co. of West Virginia is now completing about seven miles of new line, and has about seventy additional miles to build to finish its plans. Part of this is now being constructed and part of the remainder is under contract, while the rest will be contracted for next spring. There will be a number of tunnels along the route, and therefore considerable time will be required to complete the contract.

A dispatch from Pittsburgh, Pa., reports that the Ferguson Contracting Co. of that city and New York has been awarded the contract for building a 30-mile extension of the Coal & Coke Railway, including six tunnels and some heavy grading. The extension is to be completed in fourteen months.

Raleigh & Pamlico.

The Capital Construction & Development Co. of Raleigh, N. C., has been chartered, with office at 305 Wilmington street, to build the proposed Raleigh & Pamlico Railroad, which is to extend from Raleigh to Washington, N. C., and on which construction is soon to begin. The incorporators of the construction company are E. B. Barbee of Raleigh, T. M. Washington of Wilson and S. H. Crocker of Stantonburg.

Engineers are now surveying the route, one party going from Wilson toward Washington and the other from Wilson toward Raleigh. The capital stock of the construction company is \$50,000, and Mr. Barbee is the principal stockholder. Its charter gives it broad powers.

Elevated and Subway.

A bill has been introduced in the city council at St. Louis, Mo., to authorize the building of an elevated railroad and a subway. It is proposed to construct a subway from the corner of Third street and Washington avenue to the corner of Eighteenth and St. Charles streets, and from the latter point an elevated railway is to run to Taylor avenue, to Maechester avenue, to McCausland avenue and to the Watson road. It is offered to pay the city \$25,000 a year for the elevated franchise and \$5000 for the subway. Those interested are H. K. Gilman of the Western Electric Supply Co., J. E. Longworth of the American Storage & Moving Co.,

S. L. Langdale, a retired capitalist, and H. S. Doyle, a civil engineer.

Birmingham & Lineville Railroad.

The Birmingham & Lineville Railroad Co. has filed articles of incorporation at Birmingham, Ala.; capital \$100,000. The incorporators are S. E. Thompson, John S. Jemison, W. J. Prowell, R. H. Pearson, Robert Jemison and Vassar L. Allen of Birmingham and R. L. Ivey of Lineville. V. L. Allen, J. S. Jemison and R. L. Ivey are authorized to open subscription books for the stock.

It is proposed to build a railroad from Lineville, Ala., to Pyriton, all in Clay county, Alabama, with the right to extend through Talledega, Shelby, St. Clair and Jefferson counties to Birmingham, and also to extend into Tallapoosa and Randolph counties to such points as may be selected.

Colonel Lott's New Line.

R. J. Kleberg, manager of the King ranch, near Alice, Texas, is quoted as saying that the St. Louis, Brownsville & Mexican line, which is being built from Robstown to Brownsville, Texas, by Col. Uriah Lott of Alice and others, will probably be completed next spring; that about sixty miles of line have been graded, and that 25,000 ties and 2200 tons of rails are on hand. The road will be about 145 miles long, and it is expected that it will be extended to Houston. It will run through the artesian-well belt and will cross the King, John Kennedy, R. Driscoll, J. R. Armstrong, E. B. Raymond, Yturriah and other ranches.

B. & O. System Equipment.

The Baltimore & Ohio Railroad Co. has added 200 locomotives to its equipment since January 1 last, including 150 freight engines of 90½ tons each, 20 high-speed Atlantic-type passenger engines of 88½ tons each, and 30 switch engines. The two new electric motors of 160 tons each will be used for hauling heavy freight trains through the Baltimore tunnel, and this will permit the three 96-ton motors which have been in use for some years to be employed in handling passenger trains. There are now on the Baltimore & Ohio system 1805 locomotives of all classes and 85,000 freight cars, including 26,000 of steel 50-ton cars.

Electric Line in Oklahoma.

The Lawton, Wichita Mountain & Western Electric Railway Co. has been incorporated at Lawton, Okla., to build a railroad seventy-five miles long extending from Lawton to Fort Sill and also from Lawton to Lone Wolf, penetrating the Wichita mountain region. The incorporators are C. W. Johnson of Montgomery, Ala.; S. P. Brundage of St. Louis; J. R. Brattan of Carthage, Mo.; Edward H. Mitchell of El Reno, Dr. Rankin, R. A. Hubbard, Charles Mitschrich and J. H. Russell.

J. H. Hyde Now a Director.

At the annual meeting of the Western Maryland Railroad the important feature was the election of James H. Hyde, first vice-president of the Equitable Life Insurance Co. of New York, as one of the directors. Henry B. Henson, also of that city, likewise became a member of the board. Those who retired were Charles W. Slagle and William Early of Baltimore. Mr. Early was formerly secretary of the Western Maryland.

Craddock to Burnsville.

The Craddock & Burnsville Railroad Co. of Newlonton, W. Va., has been incorporated to build a steam railroad from Craddock, W. Va., to Burnsville, W. Va.,

about twenty-five miles. The incorporators are H. H. Lewis, Jr., G. S. Lewis, William Rexwood, Newlonton, W. Va.; C. A. Cutright, Buckhannon, W. Va.; W. E. Hamner, Clarksburg, W. Va.

Railroad Notes.

The contract for the Oklahoma City & Denver Railroad Co.'s line between Oklahoma City, O. T., and Alvord is to be let on November 1.

A dispatch from Denison, Texas, reports that the St. Louis & San Francisco and the Missouri, Kansas & Texas Railroads have brought within the past week a large number of homeseekers into Texas.

The Illinois Central Railroad, according to a dispatch from Memphis, is using a large gasoline motor car for track-inspection purposes. It seats twelve passengers and is capable of running 50 miles an hour.

The Illinois Central Railroad proposes to install a telegraphic block signal system over its entire main line. It will extend from Chicago to St. Louis and New Orleans, and from Fulton to Louisville, as well as over the Western lines.

The Norfolk & Southern Railroad may open the Kempsville loop about the 1st of December. This will make a continuous line from Pinner's Point to Kempsville, which is half way between Norfolk and Virginia Beach. Connection with the Belt Line is made at Berkley.

A statement given out after the annual meeting of the Chesapeake & Ohio Railway Co. at Richmond shows that the Guyandotte Valley Railway and the Greenbrier Railway, two of the principal feeders of the Chesapeake & Ohio, have been formally consolidated with the company.

According to a report from Fort Myers, Fla., the Atlantic Coast Line's extension will be completed to that place within two months. The tracklayers are now within two miles of the river, and preparations are being made to build the bridge, which will be constructed by the American Bridge Co.

Dunn & Lallande Bros., contractors, of Birmingham, Ala., are reported as saying that the Altoona and Gadsden branch of the Louisville & Nashville Railroad will take several months to complete, because of the rugged country through which it runs. There is a 2200-foot tunnel on the line, and there is a scarcity of labor.

The election of Albert H. Flint of New York as president of the Chesapeake Transit Co. and the retirement of J. Edward Cole from that position is reported from Norfolk, Va. Mr. Flint has, it is stated, purchased a considerable interest in the company. The Chesapeake Transit line runs from Norfolk to Virginia Beach via Cape Henry.

Owing to scarcity of labor in that section, it is stated that the Illinois Central Railroad will suspend for a time its double-tracking work between Memphis, Tenn., and Fulton, Ky. The company, it is said, has been paying for unskilled labor 35 to 75 per cent. more than ever before, but it is also remarked that the work will be resumed as soon as sufficient labor can be obtained at normal prices.

Mr. James C. Norman writes from Hamburg, Ark., to the Manufacturers' Record concerning the report that he is planning to build a railroad from Lake Providence, La., to Pine Bluff, Ark., via Hamburg. He says that arrangements are not yet in shape, but feels assured that the road will be built in the near future, and that construction will commence some time in 1904. The country through which the line will run is rich in timber and has a fertile soil. The expense of building a good line would be low.

TEXTILES.

[A complete record of new textile enterprises in the South will be found in the Construction Department.]

Correspondence relating to textile matters, especially to the cotton-mill interests of the South, and items of news about new mills or enlargements, special contracts for goods, market conditions, etc., are invited by the Manufacturers' Record. We shall be glad to have such matter at all times, and also to have any general discussion relating to cotton matters.

A \$500,000 Fine-Goods Mill.

In August the Manufacturers' Record announced that W. I. Young, Atlanta, Ga., and associates had decided upon the establishment of a large cotton-manufacturing plant at Greensboro, N. C. It was stated that the product will be special cotton fabric, but the exact character of same was not given. Additional details concerning the enterprise can now be presented. Arrangements have been completed planning the initial investment to be \$500,000, and contract has been awarded for the necessary machinery. There will be 15,000 mule spindles and the necessary complement of carding and other preparatory machinery—about 450 looms, a complete dyeing equipment and other apparatus for handling and manufacturing from the raw cotton through every process up to readiness for market. J. E. Sirrine of Greenville, S. C., is the architect-engineer in charge of construction. Mr. Young has removed to Greensboro in order to give his personal attention to the development of the enterprise.

The Cotton Movement.

In his report for October 23 Col. Henry G. Heister, secretary of the New Orleans Cotton Exchange, shows that the amount of cotton brought into sight during the fifty-three days of the present season was 2,090,373 bales, a decrease under the same period last year of 602,075 bales; the exports were 1,008,137 bales, a decrease of 239,604; takings by Northern spinners, 224,599 bales, a decrease of 78,937 bales; by Southern spinners, 297,945 bales, a decrease of 44,006.

Textile Notes.

Monticello (Ark.) Cotton Mill contemplates increasing its equipment of 5000 spindles and 150 looms.

It is reported that capitalists have bought site at Jackson, Miss., for the establishment of a large cotton mill.

P. K. Green of Winston, N. C., will establish a knitting mill. He has let contract for the necessary machinery.

Cumberland (N. C.) Cotton Mills Co. has called a meeting of stockholders to negotiate a loan of \$20,000 on mortgage to cover certain improvements to the plant.

The Interstate Townsite Co., which is about to establish a new town near Oklahoma City, O. T., is planning the establishment of cotton mill to employ 300 persons.

Bonnie Cotton Mills, Kings Mountain, N. C., will enlarge its plant, now operating 5160 ring spindles. Additional buildings will be erected in connection with the improvements.

H. H. Hampton of Colbert, Ga., contemplates the establishment of a knitting mill, and is desirous of corresponding with manufacturers of the mechanical equipment needed.

J. E. Reynolds and associates have incorporated the Cleveland Mill & Power Co. of Lawndale, N. C., for developing water-power and manufacturing cotton goods. The capital stock is \$100,000.

Eastern capitalists have addressed the Chamber of Commerce, Huntsville, Ala.,

inquiring what inducements will be offered for the location of a \$200,000 cotton mill. Endeavors are now being made to accept the proposition. Several of the manufacturers interested have visited the city to investigate sites.

The Wiscasset Mills Co. of Albe-marle, N. C., will add 20,000 spindles and 500 knitting machines. It is announced that the new equipment will be ready for operation in November. The company has heretofore operated about 20,000 spindles, and it has been known that a knitting mill was in contemplation.

It is stated that the Floyd Company of Savannah, Ga., has purchased the Eatonton Cotton Mills, the Quintette Cotton Mills, the Eatonton Electric Light & Power Co. plant and three undeveloped water-powers at Eatonton, Ga. The price paid is said to be \$42,000, and it is announced that the referee has confirmed the sale.

Nims Manufacturing Co., Mt. Holly, N. C., has completed the erection of an addition two stories high, 50x60 feet, and will install considerable new machinery. One thousand additional spindles have been installed, and another thousand will be added, together with machinery for the manufacture of seine twine. Contracts for the new equipment have been awarded.

It is stated that Chicago parties contemplate locating a flax industry in Jefferson county and adjoining counties, Texas. They propose establishing flax-growing farms and building a large flax-twine mill at Beaumont. The Beaumont Chamber of Commerce is corresponding relative to the enterprise, and expects to be successful in closing negotiations for it.

Mr. Andrews of the Enfield Knitting Mills, Enfield, N. C., and a Mr. Allan of Philadelphia have submitted a proposition for the establishment of a knitting mill at Wilson, N. C. They offer to establish a \$10,000 plant provided local investors will subscribe \$6000 of the amount. The production of children's ribbed hose and the employment of about fifty operators is proposed.

It is reported that the Royal Bag & Yarn Manufacturing Co., Charleston, S. C., has ordered the necessary machinery to double its equipment of 5000 spindles and 200 bag looms. This company manufactures seamless cotton bags, and is capitalized at \$325,000. It sells its product both at home and abroad, having recently shipped 50,000 bags to London, England, and has a duplicate order from the same English buyer.

Fayetteville (Ark.) Cotton Mills Co. is being organized to build a plant of 10,000 spindles and 300 looms, and it is proposed to plan the buildings so that enlargements can be made in the future at a minimum cost. The initial mill will cost probably about \$200,000, but the company's authorized capital is \$600,000. J. H. McIlroy, vice-president of the McIlroy Banking Co., is to be one of the vice-presidents. Subscriptions to the capital are now being received.

Springfield (Tenn.) Woolen Mills, previously reported, is making rapid progress on the construction of its plant. It will have an equipment of 330 spindles, 22 looms, carding equipment, etc., for producing fine blankets. All new machinery has been ordered, and about \$35,000 will be invested in the enterprise. Harry Tatham, the superintendent, is well known to the blanket trade, having been for twenty years connected with a large blanket mill in Kentucky.

J. W. Ingle has purchased the half-interest of N. W. Collett in the Climax Hosiery Mill, Athens, Ga. He will make important improvements to the plant, and

has begun the erection of a two-story brick building 30x80 feet, together with boiler, engine and dye house 30x60 feet. The new structures will be ready for occupancy about January 1. Present equipment will then be removed to same, and the daily capacity will be increased to 350 dozen. High-grade seamless half-hose is the product.

QUOTATIONS OF COTTON YARNS.

By Buckingham, Paulson & Co., New York, Philadelphia and Chicago, October 27.

No. 10s-1 and 12s-1 warps.....	16 1/2 @ 17 1/2
No. 14s-1 warps.....	17 1/2 @ 18
No. 16s-1 warps.....	18 @ 19
No. 20s-1 warps.....	19 @ 20
No. 22s-1 warps.....	19 1/2 @ 20 1/2
No. 26s-1 warps.....	19 1/2 @ 20 1/2
No. 6s to 10s yarn.....	16 @ 16 1/2
No. 12s-1.....	16 1/2 @ 16 3/4
No. 14s-1.....	17 1/2 @ 18
No. 16s-1.....	18 @ 18 1/2
No. 20s-1.....	18 1/2 @ 19
No. 22s-1.....	18 1/2 @ 19
No. 26s-1.....	19 @ 19 1/2
No. 8s-2 ply soft yarn.....	16 1/2 @ 17
No. 10s-2 ply soft yarn.....	17 @ 17 1/2
No. 8s-2 ply hard.....	16 1/2 @ 17
No. 10s-2 ply hard.....	17 @ 17 1/2
No. 12s-2 ply.....	17 1/2 @ 18
No. 16s-2 ply.....	18 @ 18 1/2
No. 20s-2 ply.....	19 @ 19 1/2
No. 22s-2 ply.....	19 1/2 @ 20
No. 30s-2 ply yarn.....	20 @ 20 1/2
No. 40s-2 ply.....	20 1/2 @ 21
No. 8s-3, 4 and 5 ply.....	16 1/2 @ 17
No. 20s-2 ply chain warps.....	19 @ 19 1/2
No. 24s-2 ply chain warps.....	20 1/2 @ 21
No. 26s-2 ply chain warps.....	21 @ 21 1/2
No. 30s-2 ply chain warps.....	22 @ 22 1/2
No. 16s-3 ply hard twist.....	18 @ 18 1/2
No. 20s-3 ply hard twist.....	18 1/2 @ 19
No. 26s-3 ply hard twist.....	20 1/2 @ 21

The Missouri Makes a Record.

The new battleship Missouri, built for the United States navy by the Newport News Shipbuilding & Dry-Dock Co., has made on her trial trip over the Cape Ann course an average speed of 18.05 knots per hour in a run of thirty-three nautical miles, having at one time attained a speed of 18.75 knots. The contract calls for 18 knots. With tide corrections it is believed the average speed will be found to have been 18.22 knots, a new world's record for battleships of her class.

On October 9 a steamship sailed from Galveston with a cargo of cotton, wheat, etc., valued at \$979,674. On October 17 the steamship Wayfarer broke that record by clearing with a cargo valued at \$1,035,137, including 64,000 bushels of wheat, 60,000 bushels of corn, 18,700 bales of cotton, 2785 barrels of flour, 268 sacks of meadow grass and 1000 pails of lard.

In 1902 the net tonnage of Gulfport, Miss., was only 13,743. In the first nine months of this year the tonnage has amounted to 83,609. In the earlier period thirty-one seagoing vessels entered the port, and in the later period seventy-three vessels.

Mr. R. H. Henry, Mississippi's World's Fair commissioner, together with Chancellor Fulton of the State University, are working to secure a geological survey of Mississippi by the general government.

Capt. C. H. Chittenden of Sioux City, Iowa, in charge of the Missouri river improvement, has decided to put in fifteen dikes for the protection of some of the best farming land in Missouri.

Sales in the Joplin (Mo.) district during the week ended October 24 were 8,009,070 pounds of zinc ore and 1,176,170 pounds of lead ore, valued in the aggregate at \$159,890.

The Southern Pacific system has issued a circular showing the location of the fifty-four rice mills in Louisiana, thirty-three of which are outside New Orleans.

The United Fruit Co. has started a line of steamers between New Orleans and Colon.

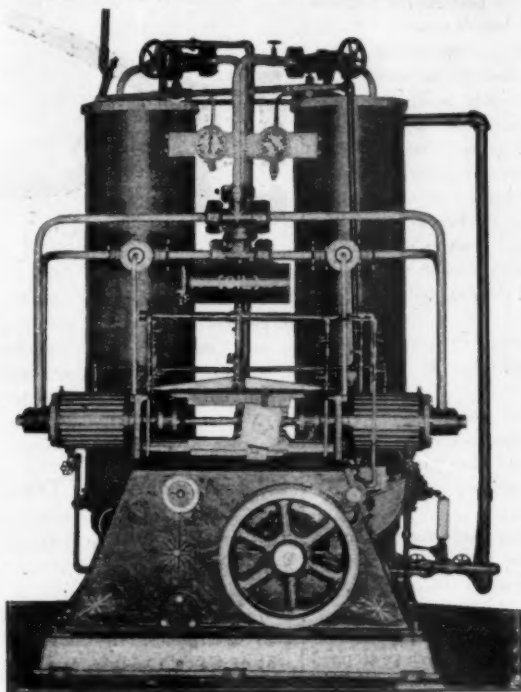
MECHANICAL.

Instantaneous Ice and Refrigerating Machine.

Ice and refrigeration machinery plays an important part in the routine of life, and some of the most inventive minds of

This machine is the product of twenty-seven years' experience in the manufacture and repair of ice and refrigerating machines.

Messrs. E. T. Frank & Son, 642-4-6 W. Pratt street, Baltimore, Md., build this machine. They will furnish book of complete details to inquirers.



INSTANTANEOUS ICE AND REFRIGERATING MACHINE.

this country have devoted their energies to the perfection of that class of equipment.

Operators of plants wherein refrigeration is needed, those who think of buying ice and refrigeration equipment outfits and others interested are asked to note the accompanying illustration, showing the Frank instantaneous ice and refrigerating machine, a new system, which is complete and embraces the latest ideas in ice-machine construction. This machine is complete on one base via compressors, brine cooler, condenser and brine pump.

Compressors and pump are driven by any kind of motive power by belting to pulley on machine. Cut gears and new process rawhide pinions are used to make the machine as perfectly noiseless as possible. Except for the click of valves in the compressor, one would not know the machine is present.

The machine is fitted with sight drop-feed oil cups, supplied by a reservoir placed over center of machine, insuring a perfect lubrication and keeping it clean from waste of oil, as all waste oil passes from bearings to base of machine, which acts as a receiver, and is caught up and filtered and used over again.

An eight-ton Frank refrigerating machine, in a test made at the works with all the refrigerating pipes used exposed to warm and hot air, reduced the temperature of the brine, which was 80 degrees at the start, at the rate of 1 degree a minute, or 60 degrees in one hour.

This machine occupies a floor space of forty-four inches wide, sixty-six inches long, and stands ninety-six inches high. A solid floor or level ground is all that is needed to carry the weight.

In the manufacture of ice no ammonia pipe is used; in other words, there is no piping at all in the tank. The brine is circulated through the brine cooler, and then into the freezing tank, by means of the brine pump on the base plate, and is continually passing back and forth from cooler to freezing tank, which avoids any ammonia from getting into the ice.

Concrete Building Blocks.

Many improved building materials have been introduced during recent years, but that about which we hear the most at present is the new concrete building block now being extensively used in the construction of buildings of all kinds.

But few realize the great strides hollow concrete building block construction

away work offered within three months after the plant had been in operation. At the present high ruling prices on lumber, stone and brick the advantages of the hollow concrete building block as an economic building material are being appreciated by the consumer, since the cost of erection is much less than stone, brick and even wood construction where wood is scarce and subject to long hauls. These concrete buildings are more fire-proof than wooden constructions, and the insurance rate is therefore reduced, while the hollow walls make the building warmer in winter, reducing the cost of fuel consumption in heating as compared with the ordinary wooden or solid wall in brick or stone buildings.

Many of the largest corporations of the country have used these concrete blocks for business structures, one of which, erected at Oklahoma City for the Armour Packing Co., is illustrated herewith.

The concrete building block is no longer an experiment, but an established fact as a reliable building material of unquestioned merit.

Probably the most satisfactory way to obtain accurate information concerning these blocks is to call for proof of work actually constructed and talk with the man who laid them in the building. Ask him how he fitted them to the frames, how he turned the corners, how he made his closures, how the frames were constructed and fitted to exclude wind and moisture, how joists were inserted, and if all blocks would fit the frames; could they be laid either side up, could the length of wall be adjusted without cutting, could the blocks be cut without breaking, how are they handled, etc.

Then talk with men who made the blocks—how many in one day, how many broken ones, what did they cost, how often did the machine get clogged, how long to clean it, how many blocks before clogging and ruin by cement and

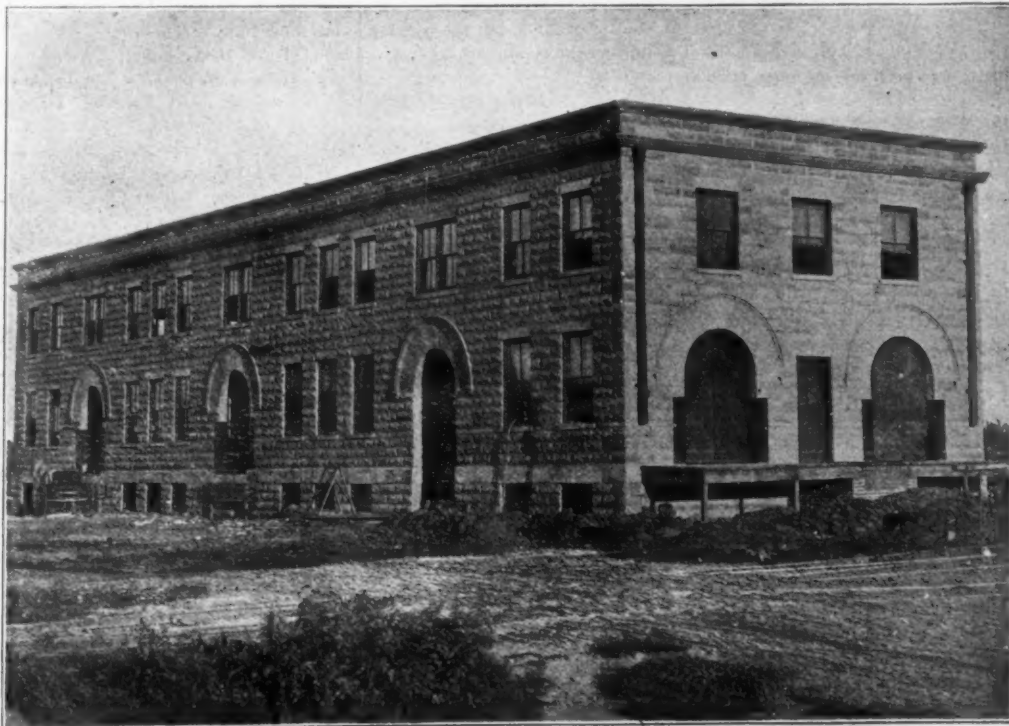
demand that the factory can hardly keep up with orders.

This machine is the result of toil and experiment, rewarded at last by entire success.

The Harmon S. Palmer Hollow Concrete Building Block Co. manufactures the Palmer machine, and wants to send printed data to investigators. Main offices at 14th and Binney streets, Washington, D. C.

Modern Knitting Machinery.

In common with so many other perfected mechanical devices now in general use, the modern knitting machine has been developed from the crudest of beginnings. It is supposed that the art of knitting was invented in Scotland at about the beginning of the sixteenth century. Certain it is that knitted stockings found their way into France from Scotland and led to the establishment of a guild of stocking-knitters. In 1589 a Nottinghamshire workman invented a knitting frame, which device was from time to time improved, and later new types were introduced. Before the introduction of machines the manufacture of knit goods was accomplished at an expenditure of much time, energy and patience by hand labor. But with the coming of the knitting machine the goods were greatly improved and both time and labor were saved. Modern knitting machinery has been developed more especially in its automatic features. The varied character of coarse and fine goods seen in the stores today indicates the perfection of modern knitting machinery. The American knit-goods industry has steadily progressed, and since the South has become an important cotton-manufacturing section there has been a noticeable growth in the establishment of mills in that territory. Many mills have been built during recent years, and established plants have increased their output and been improved to permit the production



BUILDING ERECTED ENTIRELY OF HARMON S. PALMER'S HOLLOW CONCRETE BUILDING BLOCKS.

is making in this country. Like the cement sidewalk, the hollow concrete block is invading every section. A chain of factories is being established all over the United States. Wherever these factories have been established they immediately develop a demand. In several instances these hollow concrete building block factories have been compelled to turn

sand, how are the dies kept clean, how many blocks were ever made on this machine and how many will the manufacturer guarantee the machine to make before it is ruined. The answers to these questions will show that blocks made by the Harmon S. Palmer machine have built hundreds of houses all over the country, and that the machine is in such

of better grades of marketable goods.

The observation of knitting machinery in actual operation is very interesting. The mechanical features and the turning out of the finished product seem almost human in their working. As the United States knitting industry has developed the demand for automatic knitting machinery increased, and thus able

inventors were induced to direct their attention to these equipments.

It may be added, too, that one of the oldest American makers of knitting machinery is the well-known firm of Messrs. Scott & Williams, 2079 East Cumberland street, Philadelphia. This firm was established in 1865, and it furnishes patented machines for knitting hosiery and underwear of all kinds, finishing and ornamental machinery, needles, parts and supplies generally for the knitting industry.

Broderick & Bascom Rope Plant.

There is great activity being displayed at present in the manufacture of wire rope and cordage. Various styles and sizes of this product are called for constantly in industrial avenues, and operators of rope works find their establish-



BRODERICK & BASCOM ROPE PLANT.

ments busily engaged. In this connection attention is called to the accompanying view of the extensive works of the Broderick & Bascom Rope Co. of St. Louis. This factory is located near the river front, covering an entire block 525 feet long. It is now running day and night on the production of all kinds of wire and steel rope.

Direct-Acting Steam Feed.

All manufacturers who use saw-mills will be interested in the accompanying illustration of a direct-acting steam feed. This machine for driving saw-mill carriages is operated on general principles, the advantages of which are too well known to require an extended description.

The direct-acting feed is today used in some of the largest and fastest cutting mills, and is recognized as simple, durable and efficient.

The accompanying illustration shows well the design of this feed and the man-

pace" or as rapid as steam can carry it, and therefore any kind or size of timber can be sawn with the utmost rapidity that the saw will stand.

This feed uses steam most expansively, has many advantages, and will increase the output of a mill without increase of boiler capacity, or will maintain the output with a saving in fuel.

With this type of valves the direct-acting feed is the fastest, and is claimed to have the greatest propelling power of any feed using an equal amount of steam.

The cylinder is cast iron, a special mixture best for the purpose, in sizes 7, 8, 9, 10, 11 and 12 inches internal diameter (larger to order), in sections five feet long, the walls being extra thick (to provide for rebores and ample strength at all times), each section carefully bored and reamed to gauge, and joints fitted steam tight without packing. The sections are self-lining, having "male and female" ends, and are connected with a sufficient number of large bolts, making an unusually strong and durable cylinder—an important part of the machine.

It has steam cushion ends, which greatly reduce the liability of accident in case the sawyer should fail to close the valve. The steam pipes enter near the center of the end sections, and compression commences when the piston passes the pipe, whether the valve is closed or not.

The cylinder is supported by hangers on either side, central with the line of stress, resting on timbers alongside, which form a good surface for the sliding movement of the hangers due to expansion and contraction of the cylinder, and which can be fastened to any of the mill timbers that may be convenient—no special timbering required.

The lugs, as shown on the center hangers, and the bolts through same hold the cylinder rigidly in position. The bolts through the other hangers hold the cylinder in line.

The cylinder head is strong and well fitted.

The packing box is long and takes the usual amount of packing, but the packing does not support the piston rod, as is customary.

steel tubing, machined to gauge and highly polished, in sections rigidly connected, of sizes suitable for the different cylinders.

The piston head is long but light, being cored hollow, and thus a good bearing surface is provided without undue weight to wear the cylinder.

The long head fitted with rings of the type approved by the best engine builders makes it perfectly steam tight.

The rod is attached to the head in a substantial and workmanlike manner.

The carriage bracket is of the usual rocking type, of strong design. The rod is connected with same through a steel forging which hinges on a steel pin, and adjustment for wear is provided. The pin does not turn in the bracket.

Rolls in chairs which set on the floor between the cylinder and end of the carriage travel also support the rod, and thus there is no sag.

The valves constitute the principal feature of the improved feed. Both are alike in all respects.

They are of the piston type, inside admission, steam tight, perfectly balanced and "kickless," and have the least possible number of elbows or turns. All drainage is automatic.

Different sizes are made for the different cylinders. The pipe connections are large and the ports are of greater area than the pipes.

With them steam can be throttled or used expansively, and the carriage stopped from a rapid feed or gig motion without admitting steam in front of the piston, and it is, of course, clear that the steam used in this way, as is necessary in other feeds, is wasted.

The connections with the operator's lever are the most direct and positive.

The lever moves in the direction of travel of carriage unless otherwise desired.

When the lever is at the center both valves present exhaust openings, so in no way can the carriage start when the lever is locked in that position.

Cut-off valve will be furnished on special order only. These are not recommended for feeds under forty-five feet long, and not then unless a considerable

lead as soft materials, an advantage readily appreciated. The cutters are made of the very best quality of drop-forged tool steel, which warrants their wearing for a long time, the taper hole preventing clogging. It is not necessary to hunt for a wrench to change the cutters; a

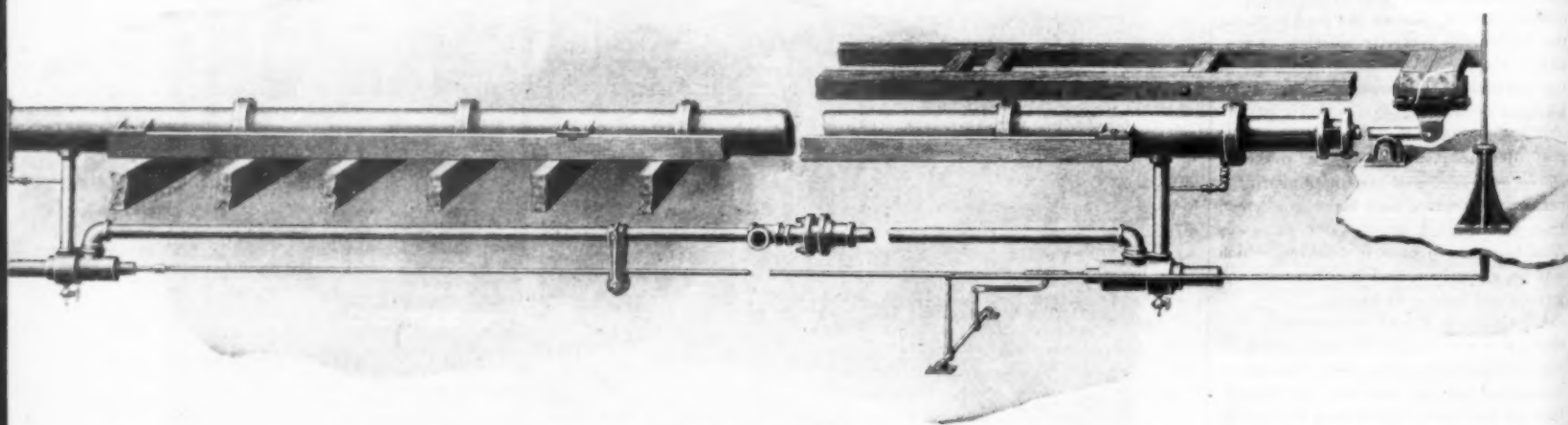


A NEW PUNCH.

screwdriver and half a turn of a screw easy of access does the work. Three sizes of cutters are furnished with each punch, one-sixteenth, one-eighth and one-quarter. Other sizes to meet requirements can be furnished. The punch is manufactured by Messrs. R. A. Hammond & Co., 288 Congress street, Boston, Mass.

A Flourishing Town.

There are a number of flourishing towns in the Piedmont section of Georgia. They have grown rapidly with the industrial development of their vicinity and the establishment of factories and other business enterprises. Newnan, the county-seat of Coweta county, is a place of this kind. This town owns and has operated with success all the public utilities, such as water-works, electric-lighting system and electric-power plant, and the cost of water and light to the citizens has been reduced to a minimum. The Newnan Cotton Mills, capitalized at \$300,000, employs 350 people and pays about \$6000 monthly in wages. The Virginia-Carolina Chemical Co. has one of its branches at Newnan, the yearly output being 20,000 tons, the employees numbering seventy-five, and the monthly pay-roll amounting to \$12,000. Another important manufacturing enterprise is the boiler and engine works of the Cole Manufacturing Co., which has a pay-roll of \$12,000 a month. There are also vari-



DIRECT-ACTING, OR "SHOTGUN," STEAM FEED.

ner of attaching same to the carriage and to the mill timbers.

There are no unnecessary joints to leak steam or to wear and cause lost motion. All motions are direct and positive. The principles of operation are familiar, and there is nothing liable to get out of order.

It will be noted that only end valves are shown, and only this type is offered, because they admit and exhaust steam quicker, and by reason of less clearance are so economical in the use of steam.

The carriage can be driven as a "snail's

The gland, or follower, is long and lined with anti-friction metal on which the rod rides. It can be turned to six different positions for wear before reabbtting, and then this work can be done at the mill. Under the conditions reabbtting will be an infrequent requirement.

As the packing does not have to support the rod, a tight joint can be maintained with but slight pressure on the packing, and both the rod and packing will last much longer.

The piston rod is of double extra strong

number of short logs are to be sawn and they are sorted from the long ones.

This feed is built by the Lane Manufacturing Co., Montpelier, Vt.

A New Punch.

An accompanying illustration shows a new punch. On account of the compound leverage, this is a very powerful tool for one of its size. Usually one that can be used for moderate thicknesses of leather is all that is asked of a hand punch. This one is just as suitable for brass, copper or

ous other enterprises, and the county is about to let contract for the construction of a \$60,000 courthouse, while a \$10,000 Carnegie library building is nearing completion. Newnan's general mercantile and allied interests keep pace with the advance in industry. As a banking town Newnan is important. The population of the city is less than 5000, yet three banks, two of them national, find profitable business all the year. One of the national banks, capitalized at \$50,000, has a surplus and undivided profits of \$55,000.

In a
up p
part
the fol

EXPLA

The M
every l
partmen
plete co
ested. F
before t
its value
ments ar
ported."

If our re
the m
they will
ters that
or "rum
have our
may occu

*Means
are wan
found un
and Supp

In corr
ported in
to all con
mation w
Record.

ADDE

To insu
tions abo
the name
newly in
shown on
or to the
may be s
communi
porate or
company
by the po
prompt d
though it
the part
mail to no

WRITE

It is su
that in co
firms repo
ten specif
likely to r
than a me

Bay Mine
Colonizat
capital of
ing real e
ates of Ch

Bessemer
Chemical
manufactu
president:
T. R. Fult

Bessemer
New York,
establish g

Birmingham
Casting Co
for the er

hardware
etc., has pl
said, soon
gan is cont

foundry 50
and storeh
ply for cha
dent; H. V

B. Dimick
Dow, secre

Huntsville
Commerce
talists who
cotton mill.

Mobile—
Steamship
stock of \$15

Sheffield—
pany has co
saw-mill.

Beaver—S
Eureka Spr
gment of s

Brinkley—
Grocery Co.
Allen and o
El Dorado
Compress C

CONSTRUCTION DEPARTMENT.

TO OUR READERS!

In order to understand and follow up properly the Construction Department items, please bear in mind the following statements:

EXPLANATORY.

The Manufacturers' Record seeks to verify every item reported in its Construction Department by a full investigation and complete correspondence with everyone interested. But it is often impossible to do this before the item must be printed, or else lose its value as news. In such cases the statements are always made as "rumored" or "reported," and not as positive items of news. If our readers will note these points they will see the necessity of the discrimination, and they will avoid accepting as a certainty matters that we explicitly state are "reports" or "rumors" only. We are always glad to have our attention called to any errors that may occur.

*Means machinery, proposals or supplies are wanted, particulars of which will be found under head of "Machinery, Proposals and Supplies Wanted."

In correspondence relating to matters reported in this paper, it will be of advantage to all concerned if it is stated that the information was gained from the Manufacturers' Record.

ADDRESS FULLY.

To insure prompt delivery of communications about items reported in these columns, the name of one or more incorporators of a newly incorporated enterprise should be shown on the letter addressed to that town, or to the town of the individual sought, as may be shown in the item, as sometimes a communication merely addressed in the corporate or official name of a newly established company or enterprise cannot be delivered by the postmaster. This will help to insure prompt delivery of your communication, although it is inevitable that some failures on the part of the postal authorities to deliver mail to new concerns will occur.

WRITE DIRECTLY.

It is suggested to advertisers and readers that in communicating with individuals and firms reported in these columns a letter written specifically about the matter reported is likely to receive quicker and surer attention than a mere circular.

ALABAMA.

Bay Minette—Real Estate.—Baldwin County Colonization Co. has been organized, with capital of \$50,000, for purchasing and improving real estate. H. C. Bartling and associates of Chicago, Ill., are interested.

Bessemer—Medicine Factory.—Fulton Chemical Co. has been incorporated for manufacture of medicines. D. H. Fulton is president; Isaac Woods, vice-president, and T. R. Fulton, secretary-treasurer.

Bessemer—Gas Plant.—National Gas Co. of New York, N. Y., will apply for franchise to establish gas plant in Bessemer.

Birmingham—Casting Works.—American Casting Co., organized with capital of \$20,000 for the erection of plant to manufacture hardware specialties and for small castings, etc., has plant well under way and will, it is said, soon be ready for business. J. M. Morgan is contractor, and buildings will include foundry 50x150 feet, machine shop 60x80 feet and storehouse 30x90 feet. Company will apply for charter. George H. Harris is president; H. V. Dimmick, vice-president; Daniel B. Dimmick, general manager, and J. E. Dow, secretary-treasurer.

Huntsville—Cotton Mill.—The Chamber of Commerce is negotiating with Eastern capitalists who contemplate building a \$200,000 cotton mill.

Mobile—Steamship Company.—Southern Steamship Co. has reorganized, with capital stock of \$150,000, which will be increased to \$200,000.

Sheffield—Saw mill.—Tuthill-Patterson Company has commenced erection of its proposed saw-mill.

ARKANSAS.

Beaver—Silver Mine.—Warren Masters of Eureka Springs, Ark., is arranging for development of silver mine at Beaver.

Brinkley—Mercantile.—Chartered: Allen Grocery Co., with capital of \$7500, by N. C. Allen and others.

El Dorado—Cotton Compress.—St. Louis Compress Co. has purchased and will put

in operation plant of the El Dorado Compress Co.

Fayetteville—Cotton Mill.—Fayetteville Cotton Mills Co. is being organized to build a plant of 10,000 spindles and 300 looms, with buildings planned for future enlargements; authorized capital \$600,000; cost of initial mill probably about \$200,000. J. H. McIlroy, vice-president McIlroy Banking Co., will be one of the vice-presidents.

Fort Smith—Coal Mines.—F. Bache, Ransom Galley and J. R. Startzell of Fort Smith, H. Newman of South McAlester, I. T., and J. B. Hilling of Burma, Ark., have incorporated the Denman Coal Co., with capital stock of \$25,000, to mine coal, manufacture coke, etc.; also the Bache-Denman Coal Co., with capital stock of \$100,000, for the same purposes.

Harrison—Mica and Kaolin Mines.—Peerless Mica & Kaolin Co. has been incorporated, with capital of \$250,000, by Allen Smalley, Upper Sandusky, Ohio; W. G. Gardner, Toledo, Ohio; John J. Gehan, Harrison, Ark., and Eugene D. Gray, Eureka Springs, Ark.

Harrison—Asphalt Company.—National Rock Asphalt Co. has been incorporated, with capital stock of \$1,000,000, by Allen Smalley of Upper Sandusky, Ohio, president; W. G. Gardner of Toledo, Ohio, vice-president; John G. Gehan of Harrison, Ark., secretary, and James Cole of Eureka Springs, Ark., treasurer.

Little Rock—Zinc Mines.—United Zinc Co. of Arkansas, with headquarters at St. Louis, Mo., has been incorporated, with capital of \$300,000, by John A. Bunch, A. F. Bunch of Harrison, Ark.; J. C. McKean, G. L. Faulhaber, Melvin R. Moore of St. Louis, Mo., and others.

Little Rock—Furniture Company.—Simpson, Webb & Cornish Furniture Co. has increased capital from \$30,000 to \$50,000.

Little Rock—Gold Mines.—D. A. Gray and associates have organized the Volcanic Mining & Milling Co. for development of gold mines in Wichita mountains of Oklahoma Territory.

Little Rock—Basket Factory.—W. A. Paul of Burlington, Iowa, reported several months ago as investigating with view to establishing basket factory in Little Rock, has organized the Little Rock Basket Works, with capital of \$25,000, and will purchase machinery at once for equipping plant with capacity of from 150 to 200 cars of fruit and vegetable baskets per year. Among others interested with Mr. Paul are J. M. Griffin and E. N. Weigel.

Monticello—Cotton Mill.—Monticello Cotton Mill contemplates increasing its equipment of 5000 spindles and 150 looms.

Pine Bluff—Mattress Factory.—Pine Bluff Bedding Co. will erect two-story brick building to be equipped as mattress factory.

Wilmar—Stave Factory.—Wilmar Stave Co. has been incorporated, with capital of \$10,000, and H. C. Rule, president; C. C. Gates, E. G. Hoke, J. B. Kemp and B. P. Kidd.

FLORIDA.

Fort Myers—Fruit Company.—Deep Luck Fruit Co., with capital of \$40,000, has been incorporated by W. D. Langford, Freeman P. Roach and John M. Roach.

Gainesville—Planing Mill.—The Planing Mill & Coffin Co. has been incorporated, with capital of \$20,000, for operating planing mill and coffin factory by I. M. Riles, J. Medlin, E. W. Wynn and N. G. Wade.

Jacksonville—Naval stores Company.—Hillman, Sutherland & Co. have been organized for purpose of manufacturing naval stores by W. J. Hillman and others, and represents a consolidation of various turpentine interests.

Jacksonville—Pine-product Plant.—Pine Product Construction Co. of Fayetteville, N. C., D. G. McKeithan of Jacksonville, Fla., president, has made arrangements for establishing plant in Jacksonville to manufacture wood turpentine, oil of tar, tar and charcoal; capacity will be 1000 barrels of spirits per day, and the plant will distill sixty cords of wood a week. Company will also establish and operate creosote works in connection with the pine-product plant.

Pensacola—Towboat Company.—Chartered: Dunwoody-Aikin Towboat Co., with capital of \$75,000, by I. H. Aikin, H. Baars and Bryon Dunwoody.

Pensacola—Naval stores Company.—J. P. Williams Co. of Savannah, Ga., naval stores firm, will locate in Pensacola.

St. Augustine—Laundry.—C. J. Simons of Ypsilanti, Mich., and O. G. McOmber of St. Augustine will establish steam laundry.

West Palm Beach—Packing Company.—Pompano & Packing Co., with capital of \$2500, has been incorporated by O. M. Gardner, George O. Butler and James McComb, Jr.

GEORGIA.

Athens—Knitting Mill.—Chimax Hosiery Mills has begun construction of two-story building 30x50 feet, also boiler, engine and dyehouse 30x60 feet; will remove to same about January 1 and then increase capacity.

Dalton—Chair Factory.—Brumby Chair Co. of Marietta, Ga., will erect and operate chair factory in Dalton.

Elliston—Cotton Gln.—E. W. Bullock will rebuild cotton gin recently reported burned. R. M. Williams is architect, and building will be 30x40 feet.

Macon—Wagon Factory.—Brown Wagon Co. will rebuild wagon factory reported burned at loss of \$30,000; building will be three stories, 225x50 feet; R. L. Brown, general manager.

Newnan—Real Estate.—R. H. Hardaway, G. R. Black, I. P. Bradley and others have incorporated the Newnan Investment & Improvement Co., with capital of \$20,000, for dealing in and improving real estate.

Savannah—Rosin-oil Mill.—It is reported that N. Brown Caldwell of Chicago, Ill., will establish rosin-oil mill at Savannah.

Tallahassee—Iron Furnace.—Southern Car Wheel Iron Co., previously reported incorporated with capital of \$100,000 for operating iron furnace, has had plant in operation about a year. Company organized by electing Stephen N. Noble, president and manager, Tallahassee; W. M. Kelly, Atlanta, Ga., vice-president, and R. H. Brown, secretary-treasurer.

KENTUCKY.

Beatrice—Oil Wells.—Beatrice Oil Co., with capital of \$25,000, has been incorporated by A. C. Young and others.

Carlisle—Water-works.—City will vote November 3 on issue of \$40,000 of bonds for water-works. Address The Mayor.

Dema—Mercantile.—Chartered: Dema Mercantile Co., with capital of \$7000, by Henry Saylor and others.

Harrodsburg—Oil and Gas Wells.—Mercer Acme Oil & Gas Co. has been organized, with capital stock of \$500,000, for development of oil and gas wells. D. L. Moore is president; J. H. Grimes, secretary; C. D. Thompson, vice-president and treasurer.

Hopkinsville—Telephone System.—E. B. Tyler, representing the Ideal Construction Co. of Lima, Ohio, has franchise for constructing telephone system in Hopkinsville.

Lackey—Saw-mill.—Chartered: Caudill & Williams, for establishing saw and planing mills; capital \$10,000; P. R. Caudill and Alf. Williams, incorporators.

Langley—Telephone System.—Langley Telephone Co. has increased capital to \$9000, and will extend system from Langley to Dorton.

Livingston—Coal Mines.—New Livingston Coal Co. has been incorporated, with capital of \$15,000, by W. McC. Johnston, Mayne and John T. Johnston, all of Lancaster, Ky.

Louisville—Broom Factory.—H. O. Cease will establish broom factory with capacity of twenty dozen brooms per day.

Louisville—Mattress Company.—Franke Felt Mattress Co. has been incorporated, with capital of \$2000, by Frederick Franke, Herman Joseph, Myer Heissman and others.

Louisville—Mercantile.—Wood, Stubbs & Co., dealers in seed and fertilizers, has been incorporated, with capital of \$75,000, by C. F. Wood and W. P. Stubbs.

Louisville—Packing Plant.—Pfaffinger Packing Co. has been incorporated, with capital of \$50,000, by William L. Pfaffinger, Charles J. Becker, Albert C. Pfaffinger and others.

Louisville—Bottling Plant.—Central Consumers' Co. is having plans drawn by Chas. D. Meyer for erection of four-story brick and stone bottling plant to cost about \$75,000 and to be equipped with most modern machinery for bottling beer.

Mallie—Corn and Feed Mills.—Mallie Corn and Feed Mills has been organized, with capital of \$4000, by George Humphreys and others.

Marion—Lead and Zinc Mines.—Glendale Mining Co. has been organized, with capital of \$12,000, as recently reported under Mor-

ganfield, Ky., and is developing lead and zinc mines in Crittenden county. H. M. Walker of Marion is engineer and architect in charge. Company will later on install mill to crush and separate the zinc and lead. Address G. L. Drury, secretary-treasurer, Morganfield, Ky.*

Paducah—Peanut Company.—Southern Peanut Co. has been incorporated, with capital of \$20,000, by J. W. Scott, W. F. Bradshaw, Jr., and Cook Husbands.

Shelbyville—Poultry Company.—Kentucky Poultry Co. has been incorporated, with capital of \$5000, by L. G. Smith, S. S. Kirk, J. E. McKenney and others.

Smithsboro—Gas and Oil Company.—Wagner Oil & Gas Co. has been organized, with capital of \$32,000, by Geo. C. Wagner and others.

Stacey—Mattress Factory.—Fred Long and Z. F. Smith will establish mattress factory.

Yocum (P. O. at Jane)—Coal Mines.—Fulton Branch Coal Co. has been organized, with capital of \$40,000, for development of coal mines by W. B. Fulton and M. C. Branch.

LOUISIANA.

Houma—Timber-land Development.—W. E. Black, G. S. Joice and N. C. Abbott of Chicago, Ill., have purchased timber lands in Terrebonne parish amounting to \$300,000, and will erect large mills in vicinity of Houma for developing the property.

New Orleans—Bed Factory.—Crescent City Bed Factory has awarded contract for erection of its factory building to W. T. Carey & Bro. at \$16,500.

New Orleans—Overall and Jumper Factory.—Battleship Manufacturing Co. has been organized, with capital of \$50,000, for manufacture of overalls and jumpers, and will establish factory at once with capacity of 100 dozen garments per day. Among those interested are A. Kory, M. A. Kory and Ed. Kory of the clothing firm of Kory & Co.

New Orleans—Fish and Oyster Company.—Kennedy & Lopez Oyster & Fish Co., Limited, has been incorporated, with capital of \$2000, by Wm. P. Kennedy and others.

MARYLAND.

Baltimore—Clothing Company.—Hamburger Bros. & Co. has been incorporated for continuing clothing business. Philip Hamburger, Ned Liberles, Louis A. Metzger and others are incorporators. Capital is \$250,000.

Baltimore—Real Estate.—Chesapeake Real Estate Co. has been incorporated, with capital of \$1000, by Edward Gordon, Chas. W. Miller and others.

Cumberland—Foundry and Machine Shops.—Cumberland Foundry & Machine Co. has increased capital from \$5000 to \$10,000.

Towson—Carpenter Shop.—Jacob Fowble has contract for erecting the two-story carpenter shop to cost \$5000 for the Sheppard and Pratt Hospital.

Washington, D. C.—Glass Factory.—National Glass Co. has been organized, with capital of \$50,000, for manufacture of glass, and will operate an abandoned plant in Twining City, consisting of building with furnace, stack and ovens. Louis D. Wine is president; R. F. Bradbury, vice-president; Joseph R. Atkinson, treasurer, and T. Conrad Dodge, secretary.

MISSISSIPPI.

Gallman—Saw and Planing Mill.—J. W. Parsons will rebuild saw and planing mill lately reported burned; building will be 48x120 feet.

Gulfport—Lumber Mills.—J. R. Pratt, G. R. Burton, J. R. Hill and others have incorporated the Ten Mile Lumber Co., with capital of \$210,000, for manufacture of lumber, and will erect saw and planing mills.

Itta Bena—Saw-mills.—W. H. Rucker will erect two circular-saw mills of 20,000 feet capacity each for development of hardwood timber properties recently purchased.

Winona—Water-works and Sewerage System.—City has voted issue of \$100,000 of bonds for construction of water-works and sewerage system. Address The Mayor.

MISSOURI.

Fredericktown—Zinc Mines.—Geo. O. Orchard, E. W. Wright, T. D. Ferguson and J. L. Dalton of Poplar Bluff have organized company with capital of \$250,000 for development of 250 acres of zinc property near Fredericktown.

Poplar Bluff—Lathe Factory.—National Patent Lathe Manufacturing Co. has purchased Henry Turner's planing mill and lumber yards, and will install machinery for manufacture of patent gum lathe.

St. Louis—Real Estate.—Real Estate & Investment Co., with capital of \$55,000, has been incorporated by J. E. Gorman, Charles T. Farrar, Robert L. McLaren and others.

St. Louis—Machine Shop.—Gravois Machine Shop Co. has been incorporated, with capital of \$500, by Frank Novy, Frank J. Holman and others.

St. Louis—Real Estate.—Broadway Investment Co. has been incorporated, with capital of \$30,000, by August L. Wachter, John A. Rehels, L. F. Hammer, Jr., and others.

St. Louis—Real Estate.—Thomas Wright Investment Co. has been incorporated, with capital of \$100,000, by Emille Wright, W. R. Wright and others.

St. Louis—Real Estate.—Newstead Realty Co. has been incorporated, with capital of \$240, by Chas. W. S. Cobb, Henry Greve, Robt. Rutledge and others.

St. Louis—Real Estate.—Reller Realty Co. has been incorporated, with capital of \$30,000, by Henry Reller and others.

St. Louis—Fuel Plant.—Caleco Fuel Manufacturing Co., previously reported incorporated with capital stock of \$500,000, has organized for the manufacture of Caleco, a substitute for coal. E. H. Kastor is president; L. D. Kingsland, vice-president; H. L. Harford, secretary, and R. H. Kastor, treasurer. B. F. Allen, No. 186 Laclede Building, is engineer, and company's address is also No. 186 Laclede Building.

St. Louis—Real Estate.—Chartered: D. Schulz Realty Co., with capital of \$50,000, by A. R. Schulz and others.

St. Louis—Publishing.—Chartered: Twentieth Century Publishing Co., with capital of \$500, by John L. Settle and others.

St. Louis—Zinc Mines.—Olympia Zinc Co. has increased capital from \$40,000 to \$60,000.

St. Louis—Automobile Company.—Western Automobile Co. has been incorporated, with capital of \$10,000, by Marion L. J. Lambert, Samuel Brendan, Samuel B. McPheeters and others.

NORTH CAROLINA.

Albemarle—Cotton and Knitting Mill.—Wiscasset Mills Co. will add 20,000 spindles and 500 knitting machines. Contract for the new equipment has been awarded, and the new mill is to be in operation next month.

Balsam—Paper Mill.—J. B. Lippincott Co. is erecting pulp plant for manufacture of paper used in its books and periodicals.

Charlotte—Clothing Company.—Tate-Brown Company has been incorporated, with authorized capital of \$25,000, by J. C. Tate, C. W. Brown and A. B. Patterson, for manufacture of clothing.

Columbia—Milling and Manufacturing.—Seppernong Milling & Manufacturing Co. has been incorporated, with capital of \$25,000, for conducting general lumber business.

Greensboro—Cotton Mill.—It is reported that 15,000 spindles and about 450 looms, with dyeing and finishing plant, etc., will be the equipment of the cotton mill announced in August as to be built by Wm. I. Young of Atlanta, Ga., and associates. Details have been arranged, contracts for machinery awarded and construction will soon begin. The plant as planned now will cost \$500,000. J. E. Shirrine of Greenville, S. C., is the architect-engineer in charge. Mr. Young has removed to Greensboro, and can now be addressed there.

Greensboro—Spoke and Handle Factory.—Carolina Spoke & Handle Co. has been incorporated, with authorized capital of \$100,000, by W. B. Clement, J. G. Forshee, Jr., and John H. White, for manufacture of spokes, bobbins, shuttles, etc.

Henderson—Telephone System.—Home Telephone & Telegraph Co., reported recently as incorporated with capital stock of \$500,000, will acquire property of the Henderson, Carolina & Virginia Telephone Co., which operates twenty exchanges and 1200 miles of toll line in North Carolina and Virginia. Improvements and extensions will be made. J. P. Taylor is president; F. C. Toepelman, vice-president, and J. I. Miller, secretary-treasurer.

Indian Trail—Gold Mine.—M. Viroche has organized the Brown Hill Mining Co., with capital of \$25,000, for developing the Brown Hill gold mine near Indian Trail.

Island Ford—Water-power Development.—It is reported that Northern parties are negotiating for the purchase of a water-power owned by W. K. Jackson at Island Ford, and if successful will develop same electrically.

Kings Mountain—Cotton Mill.—Bonnie Cotton Mills will enlarge its plant; now operating 5160 ring spindles.

Kings Mountain—Cotton-oil Mill.—G. F. & J. B. Hambright contemplate erection of \$20,000 cottonseed-oil mill.

Lawnside—Cotton Mill.—J. E. Reynolds and others have incorporated the Cleveland Mill & Power Co., with capital stock of \$100,000, to develop water-power and establish cotton mill.

Marietta—Lumber Company.—Marietta Lumber Co. has been incorporated, with capital of \$30,000, by W. J. Edwards of Sanford, N. C.; T. C. McNeely, O. M. Britt of Kingsdale, N. C., and others.

Monroe—Telephone System.—J. A. Allen and associates will organize stock company for construction of telephone system.

Monroe—Fertilizer Factory.—Monroe Cotton Oil Mill Co. will establish fertilizer factory in connection with its cottonseed-oil mill.

Mt. Airy—Lumber Company.—Dan Valley Lumber Co., reported several months ago as incorporated with capital of \$25,000 for development of timber lands, manufacture of lumber, etc., has increased capital to \$175,000. W. T. Carter is president of the company.

Mt. Holly—Cotton Mill.—Nims Manufacturing Co. will install 2000 additional spindles, also machinery for manufacturing seine twine. A building 50x60 feet has been erected, and contract for the machinery awarded.

Pantego—Real Estate.—Pantego & Belhaven Real Estate & Investment Co., with capital of \$12,000, has been incorporated by John H. Small and Angus Maclean of Washington, N. C.; C. P. Aycock and P. H. Johnson of Pantego.

Salisbury—Granite Quarries.—Salisbury Pink Granite Co. has been incorporated, with authorized capital of \$300,000, by Lewis H. Jansen of Salisbury, J. R. Moechal, J. P. Knorche, W. H. Brown and David A. Murphy of Kansas City, Mo.

Wake Forest—Foundry.—Wake Forest Foundry Co. has been incorporated, with capital of \$10,000 and privilege of increasing to \$100,000, by John G. Dunn, S. P. Holding, W. W. Holding, J. L. Allen and others.

Wilson—Knitting Mills.—Mr. Andrews of the Enfield Knitting Mills, Enfield, N. C., and a Mr. Allan of Philadelphia contemplate establishing a \$10,000 knitting mill at Wilson.

Winston—Tobacco-box Factory.—R. D. Pegram and E. L. Anderson have purchased interest in the Shelton Tobacco-Box Factory and will make extensive improvements, including erection of new saw-mill and installation of machinery for manufacture of tobacco-box, lining, caddy strips, hoghead staves, etc. Plant will be operated as the J. E. Shelton Box Co.*

Winston—Knitting Mill.—P. K. Green will establish a knitting mill, and has awarded contract for the equipment.

SOUTH CAROLINA.

Carlisle—Mercantile and Real-estate Company.—Chartered: Carlisle Mercantile & Investment Co., with capital of \$2500, by C. Dawkins, J. J. Jeter, J. W. Dawkins and Benj. Tucker.

Charleston—Cotton Mill.—It is reported that the Royal Bag & Yarn Manufacturing Co. has ordered machinery to double its yarn and bag mill; original equipment 5000 spindles and 200 bag looms.

Charleston—Cannery.—Charleston Canning Co. will install additional machinery for increasing capacity.

Cheraw—Foundry and Machine Shops.—Cheraw Foundry & Machine Co. has been incorporated, with capital of \$8000, by John Maynard and D. J. McPherson.

Johnston—Windmill-equipment Factory.—W. J. Hatcher will establish factory for manufacture of windmill tanks and towers, as recently reported.*

Leeds—Mercantile.—Chartered: The Welling Co., with capital of \$3000, by J. G. Welling and others.

Walhalla—Cheese Factory.—Walhalla Cheese Co. has been organized by W. A. Strother, J. P. Keese, R. T. Jaynes and others for erection of cheese factory.

Walterboro—Telephone System.—H. W. Jones is interested in the formation of company for installation of telephone system.

West Union—Cotton-oil Mill.—West Union Oil Mill has been organized for erection of 20-ton cottonseed-oil mill. Otto Kaufman of Walhalla, S. C., is architect; capital to be invested \$20,000.

TENNESSEE.

Bristol—Electric-light and Gas Plant, Water-power Development, etc.—United Gas

& Electric Co., Edwin E. Witherby, general manager, 40 Wall street, New York, has secured control of the Bristol Gas & Electric Co. and the Bristol Belt Line Railway, as previously reported, and will operate same, making needed extensions to gas mains and electric-lighting and power service. Company has also taken over, in addition to above-mentioned property, the Bristol-Goodson Water Co., and will operate the three plants under one management; is also considering a water-power development near Bristol that will generate from 1500 to 3000 horse-power, a portion of which will be used for pumping water, the balance of the power to be brought to Bristol electrically for use of the lighting and railroad company, and for other purposes. Preliminary surveys are now being made, and all contracts for apparatus, etc., will be made direct from New York office.

Cave—Trousers.—Burroughs & Taylor Co. is erecting an addition to trousers factory one story, 45x65 feet, as recently reported; capacity 600 pairs of pants per day.

Chattanooga—Medicine Factory.—Dr. E. B. Clark has purchased, will enlarge, improve and operate entire plant of Chickamauga Medicine Co.

Chattanooga—Box Couch and Window-seat Factory.—R. B. Fothergill has established factory at 711 Georgia avenue for manufacture of box couches and window seats, and will operate as the Chattanooga Couch Co. Electricity will be motive power.*

Chattanooga—Woodworking Factory.—King-Baxter Lumber Co. is building an addition to its plant which, when completed, will be equipped with machinery for manufacture of sash, doors and blinds.

Cleveland—Nursery.—Easterly Nursery Co. has been incorporated, with capital of \$10,000, by W. A. Easterly, G. M. Bazemore, J. F. Johnson and others.

Coalfield—Coal Mines.—H. B. Bowling Coal Co. contemplates installing an electric-haulage plant at its coal mines.

Greenville—Electric-light Plant.—Southern Sanitarium Co. will install electric-light plant.

Greenville—Cannery.—E. A. Lancaster and John Q. Williams contemplate establishing cannery.*

Knoxville—Coffin and Casket Factory.—Southern Coffin & Casket Co. has increased capital from \$25,000 to \$40,000, and will make some improvements, as recently reported.*

Knoxville—Clothing Company.—J. T. McTeer Clothing Co. has been incorporated by J. T. McTeer, G. W. McTeer, J. G. Evans and others; company has operated heretofore as McTeer, Hood & Co.

Memphis—Jewelry Company.—Burns-Barry Company has been incorporated, with capital of \$30,000, by E. L. Burns, S. P. Barry and others.

Memphis—Printing Plant.—T. V. Holland, T. F. McCullough, E. Edmonson, J. E. Miller and F. F. Whitte have incorporated the Holland Printing Co. to operate printing plant.

Memphis—Syrup Cannery.—C. E. Coe will establish factory for canning syrup.

Memphis—Novelty Factory.—Southern Novelty Manufacturing Co., reported recently as incorporated with capital of \$10,000, will establish plant at 297 Main street for manufacture of calendars, leather goods, signs, etc.*

Memphis—Water-works Improvement.—Memphis artesian water department, Lawrence Simpson, general superintendent, will build \$4000 protecting wall for its water plant, and also purchase about \$15,000 worth of new pipe for extending its system in eastern part of city.*

Memphis—Stone-crushing Plant.—City will erect stone-crushing plant to cost \$5000 and with capacity of 125 cubic yards per day; J. A. Oumberg, city engineer.

Mt. Pleasant—Lumber Company.—Great Southern Lumber Co. has been incorporated, with capital of \$12,000, by M. E. Wheeler of Mt. Pleasant, E. D. Smith of Mt. Pleasant and John W. Fry, J. F. Brown and others.

Nashville—Candy Machinery.—The company reported recently to be organized by James L. Demoville and associates for manufacture of the patent electrical device of W. J. Morrison and J. C. Wharton for the manufacture of candy has been incorporated as the Electric Candy Machine Co., with capital of \$200,000. J. H. McPhail, Guilford Dudley, W. P. Rankin and H. J. Grimes are also interested.

Nashville—Laundry.—Rice & Dowell will establish steam laundry in West Nashville.

Pulaski—Mining, etc.—Kentucky Mining, Improvement & Exploration Co. has been incorporated, with N. A. Crockett, president; F. E. Daly, secretary-treasurer, and Ben Childers, vice-president.

TEXAS.

Ablene—Refinery.—Ablene Cotton Oil Co. will erect and operate refinery in connection with its cottonseed-oil mill.

Bay City—Mercantile.—Hudson Grocery Co. has amended charter, changing name to Planters' Mercantile Co.

Beaumont—Oil Properties.—It is reported that the Hogg-Swayne interests in Texas and Louisiana oil fields will be merged into one corporation having capital stock of from \$2,000,000 to \$5,000,000. It is said to be intention of new company to construct tanks, storage plants, refineries and pipe lines to carry oil from wells to depot, from which it will be shipped. Included in the outside capital interested is Gen. Nelson A. Miles, C. B. Northrop of Washington, representing Northern parties, and J. N. Bruck of Boston, Mass., vice-president of the Bruck Solidified Oil Co., 256 Dover street. Address Mr. Bruck for particulars.

Beaumont—Oil Wells.—Texas Developing & Drilling Co. has been incorporated, with capital of \$50,000, by Nicholas Brunner, G. S. Staley, R. L. Oswald and others.

Beaumont—Rice Mill.—Hinz Rice Milling Co.'s plant, reported recently as burned at loss of \$50,000, will be rebuilt; new building will be four stories, of brick.

Beaumont—Oil Wells.—Kidd-Brooks Oil Co. has been incorporated, with capital of \$30,000, by G. W. Kidd, Charles Brooks, S. B. Cooper and others.

Beaumont—Flax-twine Mill.—The Chamber of Commerce is negotiating with Chicago manufacturers relative to establishing flax-growing farms in Jefferson county and a flax-twine mill in Beaumont.

Bells—Cotton Gln.—J. M. Morrison will rebuild cotton gln reported burned at loss of \$8000.

Brenham—Oil Wells.—Kaiser Oil Co. has been incorporated, with capital of \$16,200, by W. E. Reichardt, E. Von Loefen, Jos. Tristram and others.

Cleburne—Steam Laundry.—Home Steam Laundry Co. has been incorporated, with capital stock of \$10,000, and will establish plant; H. D. Pittman, R. B. Stitche and James T. Griffin, incorporators.

Comanche—Sewerage System.—City will construct system of sewerage. Address The Mayor.

Houston—Electric-light Plant.—Houston Light & Power Co. will expend \$185,000 on extensions and betterments.

Lavita—Cotton-gin Works.—J. W. Guyton contemplates establishing plant for the manufacture of an all-metal ginhouse.*

Marfa—Mining.—Texas Cinnabar Mining Co. has increased capital from \$50,000 to \$100,000.

Mincola—Water-works.—Mincola Light & Ice Co. has received franchise for water-works, and will immediately make arrangements for constructing the system.

Nacogdoches—Sewerage System.—City will construct sewerage system. Address The Mayor.

Nacogdoches—Mercantile.—Chartered: Huntley Grocery Co., with capital of \$10,000, by H. A. Huntley and others.

Palestine—Oil-land Development.—M. A. Davey, M. Lasker, C. H. Moore, M. Marx and others, all of Galveston, Texas, have organized company for development of 2000 acres of oil lands in Anderson county, near Palestine.

Roscoe—Lumber Company.—Roscoe Lumber Co. has increased capital from \$25,000 to \$50,000.

San Antonio—Oil Company.—Putnam Oil Co. has been incorporated with capital of \$10,000.

San Antonio—Road Building.—County commissioners have awarded contract to J. P. Nelson for building seventeen macadamized roads radiating from San Antonio toward the county line, their cost to be about \$484,000. The work is to be completed in 250 days.

San Antonio—Road Improvement.—J. P. Nelson of San Antonio has been awarded contract at \$484,000 for construction of seventeen macadam roads in Bexar county, for which \$500,000 of bonds was recently reported as having been issued.

San Saba—Ice and Light Company.—San Saba Light & Ice Co. has been incorporated, with capital of \$15,000, by T. C. Henry, J. W. Longley, John H. Martin, T. A. Murray and others.

Saratoga—Saw-mill.—Company will be organized, with capital of \$200,000, for erecting saw-mill on timber properties of John A. McShane.

Seymour—Hardware, Implement and Furniture Company.—Seymour Commercial Co.

has been incorporated, with capital of \$20,000, and will purchase and consolidate the hardware, implement and furniture business of Peery & Smith and O. D. Goostree. J. L. Shultz is president; W. H. Francis, vice-president, and Chas. Randall, secretary-treasurer.

Sour Lake—Pumping Company.—McElvoy-Hayden Pumping Co. has been incorporated, with capital of \$10,000, by J. P. McElvoy of Dallas, E. V. Hayden, Beaumont; Frank Hunter, Sour Lake, and others.

Sour Lake—Oil Wells.—Incorporated: Fern City Oil Co., with capital stock of \$15,000, by J. P. Sheffield, Adam Hammer and N. Brunner; purpose, to drill for oil.

Tyler—Cigar Factory.—N. L. Spitzer of St. Louis, Mo., has established cigar factory at Tyler.

Waco—Trunk Factory.—J. S. South is in correspondence with Secretary Plunkett of the Business Men's Club relative to establishment of trunk factory in Waco.

VIRGINIA.

Alexandria—Locomotive-appliance Company.—American Locomotive Appliance Co. will increase its capital stock to \$400,000.

Fortress Monroe—Heating Plants.—Contract has been awarded Harris & Co. of Philadelphia, Pa., at \$25,349 for heating thirty-three buildings at Fortress Monroe, which comprise the officers' quarters and for which bids were recently advertised.

Fredericksburg—Pyrites Mines.—R. J. Payne has discovered pyrites on his property in Stafford county, and will make arrangements for developing same.

Jonesboro—Land Improvement.—Jonesboro Land Improvement Co. has been incorporated with authorized capital of \$50,000. R. E. Jones is president.

Lexington—Air-brake Factory.—Company has been organized with capital of \$50,000, to manufacture automatic air brake for railroad trains invented by P. Birmingham. W. G. Mathews of Glasgow, Va., will be president of the new company; Robert Catlett of Lexington, secretary; J. P. Birmingham, W. H. Partlow, Staunton; E. J. McCullough, Lexington; J. P. Halsey, Lynchburg, directors.

Lynchburg—Real Estate.—J. P. Bell Company has been incorporated, with capital of \$65,000, for dealing in real estate, etc. J. P. Bell is president; W. H. Wrauck, vice-president, and J. M. Dulaney, secretary-treasurer.

Martinsville—Tobacco Factory.—Rucker & Witten Tobacco Co., previously reported to erect new tobacco factory, has amended charter, increasing capital to \$30,000.

Norfolk—Real Estate, etc.—Chartered: Chesapeake Land Corporation, with capital of \$60,000, for purchase, improvement and development of real estate; M. W. Burk of Norfolk, president-treasurer; J. B. Griffin of Northampton county, North Carolina, vice-president; J. M. Goode of Norfolk, secretary.

Norfolk—Lumber Company.—West Lumber Co. has been incorporated, with capital of \$100,000, by C. R. Johnson and others.

Norfolk—Brewery.—It is reported that E. R. Bathrick of Akron, Ohio, is investigating Norfolk as site for erection of \$100,000 brewery.

Norfolk—Harness and Supply Company.—Chartered: City Harness & Supply Co., with authorized capital of \$10,000, and Percy R. Jones, president.

Norfolk—Land Improvement.—Dulwich Land Co. has been incorporated, with capital of from \$10,000 to \$25,000, by H. L. Page (president) and others.

Roanoke—Electric-light Plant.—City may consider municipal lighting. Address The Mayor.

Staunton—Electric-light Plant.—Virginia School for Deaf and Blind will install 400-light electric-light plant. Professor Randolph of Blacksburg, Va., is engineer, and Phil. Trout of Staunton, architect. Wiring will cost \$2000, and arrangements for power have not as yet been made. Wm. A. Bowles, superintendent, may be addressed.

Van Buren Furnace—Coal and Iron Mines, etc.—Van Buren Iron & Manganese Co. has been incorporated, with capital of \$200,000, by Geo. W. Bryan, J. C. Martin of Ashland, Ky.; W. H. Martin, Boone Ingalls and Chas. W. Wood of Carlisle, Ky., for development of coal, iron and other mineral lands in Shenandoah county, Virginia.

WEST VIRGINIA.

Bluefield—Coal Mines.—Mohave Coal & Coke Co. has been incorporated, with capital stock of \$1,000,000, for development of coal mines and manufacture of coke by B. T. Spencer of Catonsville, Md.; John E. Anson, Chas. S. Anderson and William Kendall of

Baltimore, Md., and Bernard McLaugherty, Bluefield, W. Va.

Charleston—Oil Wells.—Rush Run Oil Co. has been incorporated, with capital of \$30,000, for development of oil lands, by F. P. Grosscup, C. B. Couch, S. B. Avis, R. C. Franklin and others.

Charleston—Coal Mines.—Cardiff Coal Co. has increased its capital stock from \$300,000 to \$500,000 for purpose of increasing its output from 1500 to 2000 tons of coal per day; will build four to six miles of railroad and open up and develop four mines at present, which will call for mine rail, building material and power plants.*

Diamond—Coal Mines.—Witcher Coal Co. has been incorporated, with capital of \$10,000, by W. R. Taylor, C. D. Martin of Vaughan, W. Va.; M. T. Harrah of Powellton, W. Va., and A. D. Hopkins and C. H. Hardy of Lewistown, W. Va.

Elkins—Coal Mines, Coke Ovens, etc.—Davis Colliery Co., capitalized at \$5,000,000, and making extensive improvements at its mines, including construction of new railway, etc., will absorb properties on the line of the new railway, which are said to include the Washington Coal & Coke Co., 60,000 acres; Braxton Coal Co., 35,000 acres; Empire Coal & Coke Co., 11,000 acres; Mill Creek Coal & Lumber Co., 10,000 acres, making a total, with original holdings, of 138,000 acres. Company is now constructing 300 coke ovens, new tipple with capacity of 5000 tons a day and steel bin for storage of 1500 tons of slack coal at Coalton, which improvements are well under way. Henry G. Davis is president of the company.

Elkins—Spoke Factory.—R. P. Spencer, representing the Archibald Wheel Co. of Lawrence, Mass., is said to be investigating Elkins as site for spoke factory.

Fairfield—Coal Mines.—Persinger Coal Co. has been incorporated, with capital of \$20,000, for development of coal mines, manufacture of coke, by S. L. Flournoy, Geo. E. Price, Harrison B. Smith and others of Charleston, W. Va., and A. W. Persinger of Longdale, W. Va.

Fairmont—Foundry.—Helmick Foundry & Machine Co. will rebuild at once foundry and blacksmith shop reported damaged by fire to extent of \$20,000.

Fairmont—Lead and Zinc Mines.—Fairmont Lead & Zinc Co. has been incorporated, with capital of \$100,000, by E. A. Billingslea, G. H. Eldridge, Henry Blair, J. A. Graham and others.

Grafton—Coal Mines.—Davis-Brydon Coal Co. has been incorporated, with capital of \$10,000, by William R. Davis, Louis D. Brydon, Somerset, Pa.; Harry Buxton and Thos. B. Davis of Keyser, W. Va.

Huntington—Publishing.—Chartered: Huntington Herald Co., with capital of \$25,000, by C. E. Haworth, F. S. Chapman, L. Haworth and others.

Mannington—Machine Shops.—West Virginia Boiler & Machine Co. has been incorporated, with capital of \$100,000, by W. and D. Bendor, Leroy Taylor, Mannington; J. E. Carnahan, Wm. Blecker, Canton, Ohio; R. R. Carnahan, Smithfield, W. Va., and others.

Montgomery—Publishing.—Montgomery Daily News Publishing Co. has been incorporated, with capital of \$25,000, by J. C. Montgomery, L. S. Montgomery and M. J. Simms.

New Cumberland—Machine Shops.—Davis-Price Machine Co. has recently equipped its plant with new machinery adapted especially for manufacture of coal cars.

Slatersville—Oil Wells.—Carter Oil Co. has purchased 360 acres of land, on which there are fourteen producing wells, from the Bond Creek Oil Co. in Ritchie county.

Sleepy Creek (not a postoffice)—Orchard Company.—Chartered: Sleepy Creek Orchard Co., with capital of \$25,000, by W. M. Scott, S. H. Fulton, M. F. Scott, R. L. Fulton of Washington, D. C., and A. H. Apperson of Atlanta, Ga.

Wallace—Gas and Oil Wells.—Wallace Oil & Gas Co. has been incorporated, with capital of \$40,000, for development of oil and gas wells by Elihu Parks, N. L. Fowler, Isaac McIntyre and others.

Wheeling—Medicine Factory.—Fred Yost is organizing company, with capital of \$10,000, for manufacturing a dandruff cure.

Wheeling—Carriage Works.—Wheeling Carriage Co. has been incorporated, with capital of \$10,000, for manufacture of carriages, wagons, etc., by Charles W. Dietrich, Henry R. Kraft of Wheeling, William Shison, Elm Grove, W. Va., and others.

Wheeling—Iron Works.—It is rumored that the Whitaker Iron Co. and Wheeling Corrugating Co. of Wheeling, Laughlin Nail Co. of Martin's Ferry and the Portsmouth Steel Co. of Portsmouth, Ohio, will consolidate and

operate under one management as the Whitaker-Glessner Iron Co., with capital stock of \$10,000,000. The shovel factory, nail factory, sheet mills and corrugating plants of the Laughlin Company, which have not heretofore been operated continuously, will be put in active operation and other improvements made through the different properties.

OKLAHOMA TERRITORY.

Cold Springs—Townsite.—Cold Springs Townsite Co. has been incorporated, with capital of \$125,000, by H. A. Gray of Mountain Park, O. T.; W. P. Julick of Roosevelt, O. T., and J. E. Leander of Hobart, O. T.

Helena—Town-hall Company.—Chartered: Helena Town Hall Co., with capital of \$3000, by T. H. Brewer of Pawnee Rock, Kan.; C. M. and O. A. Brewer.

Lawton—Mining—Star Mining Co. has been incorporated, with capital stock of \$1,000,000, by L. K. Kalkloech, John L. Bruce, H. M. Cauble and I. T. Thompson.

Manchester (P. O. at Oklahoma City)—Cotton Mill.—The Interstate Townsite Co., which is about to establish a new town, is planning the establishment of a cotton mill.

Oklahoma City—Brick Works.—Ammann & Wood are installing new brick plant.

Snyder—Mining.—Kiowa Mining & Milling Co. has been incorporated, with capital stock of \$2,000,000, by J. Campbell, Thos. Rainey, T. J. Madison, Chas. S. Blackburn and others.

White Eagle—Telephone Company.—Reservation Telephone Co. has been incorporated, with capital of \$5000, by Geo. L. Miller of Bliss, G. W. Carson, R. S. Steele and others.

BURNED.

Ashland City, Tenn.—Sycamore Powder Mills.

Bascomville, S. C.—J. C. Jordan's cotton gin; estimated loss \$3000.

Baton Rouge, La.—Kotshell's box factory; estimated loss \$2500.

Beaufort, N. C.—L. W. Dawson's fish factory; estimated loss \$14,000.

Bells, Tenn.—C. D. Murchison & Co.'s flour mill.

Bessemer, Ala.—United States Cast Iron Pipe & Foundry Co.'s plant damaged \$5000.

Bristol, Tenn.—W. A. Johnson & Co.'s brick plant.

Candor, N. C.—Iola Gold Mining Co.'s mine mill; loss estimated at \$4000.

Dade City, Fla.—Timmons, Goodman & Co.'s turpentine distillery; loss \$3000.

Greer, S. C.—William Wilson and T. W. Wood's cotton gin; loss \$3000.

Hagerstown, Md.—M. L. Bell's grist and planing mill at Kemps.

Judsonia, Ark.—J. S. Ladd's cotton gin; loss \$3000.

Kinder Lou, Ga.—McRee Bros.' saw-mill; loss \$3000.

Lakeview, Miss.—Benjamin Boon's cotton gin; estimated loss \$5000.

Macon, Miss.—Macon compress and warehouses, valued at \$200,000.

Meadowbrook, W. Va.—Fairmont Powder Co.'s powder plant and dynamo; estimated loss \$15,000.

Meridian, Miss.—McBride Lumber Co.'s plant; loss \$2000.

Montgomery, Ala.—Four-story brick furniture house of B. Wolf; estimated loss \$40,000.

Moulton, Texas.—Moulton Cotton-Oil Mill; loss about \$12,000.

Norfolk, Va.—Old Dominion Paper Co.'s paper plant damaged to extent of \$50,000.

Pickens, Miss.—Cotton gin of Hart & Hart; estimated loss \$3000.

Raleigh, N. C.—S. W. Venable Tobacco Co.'s factory, valued at \$50,000.

Sunny South, Ala.—Hall & Steel's cotton gin.

Tamo, Ark.—A. J. Clemons' cotton gin, valued at \$3000.

Tuscaloosa, Ala.—Daniel Bros.' machine shop.

Wahee, S. C.—Dill & Lassiter's saw-mill.

Westminster, Md.—Levi T. Lee's grist mill; loss \$2000.

Windom, Texas.—Collie Neighbors' cotton gin, valued at \$8000.

Winterville, Ga.—J. W. Tuck's cotton gin, valued at \$4000.

If you want to reach the possible land buyers and investors in the North and West who are thinking of locating in the South, advertise in the SOUTHERN FARM MAGAZINE. Published by the Manufacturers' Record Publishing Co., Baltimore, Md.

BUILDING NOTES.

*Means machinery, proposals or supplies are wanted, particulars of which will be found under head of "Machinery, Proposals and Supplies Wanted."

Asheville, N. C.—Auditorium.—The Auditorium Co. will rebuild at once the Asheville Auditorium, reported burned at loss of \$40,000. Address W. F. Randolph, secretary.

Atlanta, Ga.—Hospital.—Howard Chapman has contract for erecting the new \$12,000 hospital for incurables to be built by the Atlanta Circle of King's Daughters and Sons.

Atlanta, Ga.—Church.—First Baptist Church will, it is said, make arrangements at once for erection of its proposed \$100,000 edifice, for which site was previously reported as having been purchased for \$40,000. Address The Pastor.

Baltimore, Md.—Engine-house.—Charles L. Stockhausen has contract at \$15,000 for erection of engine-house No. 24 on Patterson Park avenue.

Baltimore, Md.—Warehouse.—J. Hannibal will erect two-story brick warehouse.

Baltimore, Md.—Office Building.—Triplett & Jennings have awarded contract to E. D. Springer for erection of brick office one and one-half stories, 110x150 feet; will be heated by steam and have all modern improvements.

Baltimore, Md.—Dwellings.—C. B. Burdette has designed and will erect row of three-story brick dwellings to cost \$1500 each.

Camp Eagle Pass, Texas—Hospital.—T. E. True, D. Q. M. G., U. S. A., C. Q. M., San Antonio, Texas, will receive sealed proposals in triplicate until November 19 for construction of eight-bed hospital, brick, including installation of plumbing, gas piping and hot-water heating, at Camp Eagle Pass, according to plans and specifications to be seen at office of chief quartermaster, San Antonio, and office of post quartermaster, Camp Eagle Pass. United States reserves usual rights.

Carlisle, Ky.—School.—City will vote November 3 on issue of \$15,000 of bonds for erection of new school building. Address The Mayor.

Carthage, Mo.—Hospital.—Hospital to be known as Carthage Hospital and to cost about \$75,000 will be erected. For information address Samuel McReynolds.

Chattanooga, Tenn.—Warehouse.—Wakeman Distillery Co. has awarded contract for erection of warehouse, 50x200 feet, covered with corrugated iron and to cost \$10,000.

Cornettsville, Ky.—Stables.—Cornett Bros. will rebuild livery and feed stables recently burned.

Corpus Christi, Texas—Hotel.—Arrangements have been completed by the Board of Trade with C. M. Molling of Columbus, Ohio, for erection in Corpus Christi of the \$1,000,000 hotel previously reported as contemplated, and for which S. Hannaford & Son of Cincinnati, Ohio, were to prepare the plans. Plans have also been completed.

Cullman, Ala.—Depot.—Louisville & Nashville Railroad Co. will erect new depot; Geo. E. Evans, Louisville, Ky., general manager.

Dallas, Texas—Building.—P. H. Kleber & Son will erect new building, as lately reported, for which Skeilvig & Bristol have prepared the plans; building will be two stories, 50x100 feet, and used as bakery.

Dublin, Ga.—Library.—Harrison Bleckley of Atlanta, Ga., will prepare plans for proposed Carnegie library at Dublin.

Elkins, W. Va.—Opera-house.—Harding & Upham of Washington, D. C., have completed plans for erection of proposed two-story brick and stone opera-house; cost \$40,000.

Fort Myer, Va.—Buildings.—Capt. W. F. Clark, Q. M., will open bids November 21 for constructing blacksmith shop, guardhouse and extension to riding hall. Information on application. United States reserves usual rights.

Fort Myers, Fla.—Store Buildings.—W. Lee Harbin of Lexington, N. C., has contract to erect four stores for Harvie E. Heltman at Fort Myers at cost of \$12,000.

Fort Washington, Md.—Coal Shed.—Abe S. Bickham, constructing quartermaster, U. S. A., will open bids November 20 for construction of coal shed at pumping station, Fort Washington. Information regarding plans and specifications may be obtained from office of constructing quartermaster.

Frederick, Md.—Hospital.—Hospital of Frederick County Medical Society (previously mentioned) is remodeling building 47x70 feet at cost of \$10,000 for hospital purposes. Wesley Baltzell is architect.*

Harlan, Ky.—Church.—Southern Methodist congregation will erect \$3000 church. Address The Pastor.

Harlan, Ky.—Hotel and Office Building.—Smith & Green are erecting three-story brick and stone residence, office and hotel building to cost \$13,000.

Hindman, Ky.—Business Block.—C. W. Kelley will rebuild business block recently burned at loss of \$16,000.

Holly Springs, Miss.—College Buildings.—T. W. Raymond, president of the North Mississippi Presbyterian College, will open bids November 5 for erection of new three-story brick buildings for the college, bids to include steam heating, plumbing and electric wiring. Plans and specifications may be had by applying to the president at Holly Springs or at office of architects, B. C. Alsop and N. M. Woods, Jr., Randolph Building, Memphis, Tenn. Certified check for \$500 must accompany each bid.

Huntington, W. Va.—Warehouse.—Thornburg Manufacturing Co. of Guyandotte, W. Va., will erect warehouse in Huntington.

Huntington, W. Va.—Dan A. Mossman will erect three-story warehouse 30x134 feet to cost \$8000.

Kansas City, Mo.—Telephone Building.—Missouri & Kansas Telephone Co. will expend \$18,000 in improving its building.

Kirksville, Mo.—Federal Building.—Contract has been awarded C. Stafford Building & Construction Co. of St. Louis at \$29,880 for erection of proposed Federal building at Kirksville.

Knoxville, Tenn.—Fire Hall.—City will have plans prepared at once for erection of its proposed new fire hall; building will be sixty-four feet wide and cost about \$25,000. Address The Mayor.

Lavonia, Ga.—Hotel.—E. L. Reuther is architect and contractor for \$7000 hotel reported lately to be erected by Mrs. Kate Wilkinson.

Lawton, O. T.—Opera-house.—F. G. Hanks will build opera-house 55x90 feet, 35x55-foot stage, seating capacity 1200, with modern equipment.

Louisville, Miss.—Bank Building.—Bank of Grenada will erect new building.

Marshall, Ark.—Hotel.—V. C. Bratton is erecting \$5000 hotel.

Memphis, Tenn.—Engine-house.—City Engineer J. A. Omberg has completed plans and specifications for two-story engine-house previously reported to be erected; building will be of brick and stone, 30x70 feet, and cost \$6000.

Memphis, Tenn.—Sanitarium Addition.—Andre & Howland have contract for erecting \$9000 addition to sanitarium of Old Homestead Sanitarium Co.

Mobile, Ala.—Business Building.—Pollock & Bernheimer have let contract to George A. Robinson Contracting Co. for erection of their proposed six-story brick and stone business building. R. Benz & Sons prepared the plans.

Nashville, Tenn.—Business Building.—William Littler will erect \$10,000 business building.

Nashville, Tenn.—Business Building.—Joe Thompson will erect \$8000 business building.

Nashville, Tenn.—Store Building.—Thompson, Gibel & Asmus are preparing plans for store building previously reported to be erected by the Timothy Dry Goods Co. to replace one burned; structure will be five stories.

Nashville, Tenn.—Business Building.—Harry A. Luck will erect four-story brick and stone business structure to cost \$15,000.

New Orleans, La.—Building.—Rice Association of America, S. L. Breux, first vice-president, is having plans made by S. G. Delisle of St. Louis, Mo., for erection of \$29,000 building to be used as rice kitchen.

New Orleans, La.—Buildings.—Mordcaai T. Endicott, chief of bureau of yards and docks, Navy Department, Washington, D. C., will open bids November 23 for constructing brick and steel building for shops and offices at naval station, New Orleans; appropriation \$70,000. Plans and specifications can be seen at bureau or will be furnished by commandant of station named upon deposit of \$10.

New Orleans, La.—Building.—Mordcaai T. Endicott, chief of bureau of yards and docks, Navy Department, Washington, D. C., will open bids November 23 for brick office building, 30x50 feet, at naval station, New Orleans, La.; funds available \$30,000. Plans and specifications can be seen at the bureau or will be furnished by the commandant of naval station named upon deposit of \$10.

Norfolk, Va.—Bank Building.—Plans have been completed and bids are about to be asked for erection of Merchants and Mechanics' Savings Bank building, which will be three stories, of brick and stone.

Opelika, Ala.—Opera-house and Hotel.—

Company will be organized, with capital of \$75,000, for erecting opera-house and hotel to replace the Cooper Hotel, recently burned.

Savannah, Ga.—City Hall.—City will build new city hall at cost of \$150,000 after plans by W. H. Witcover. Bids will be advertised shortly.

Sherman, Texas.—School.—Collinsville School District will build schoolhouse to cost \$10,000.

St. Louis, Mo.—Hotel.—Contract for erection of the proposed Grand View Fraternal Hotel has been awarded Dunnivant & Co.

St. Louis, Mo.—Business Building.—J. B. Campbell has had plans made by Barnett, Haynes & Barnett for erection of 20-story business building.

Washington, D. C.—Buildings.—Walter F. Collins will erect three two-story brick dwellings to cost \$5500; Lottie L. Burn will erect three two-story brick dwellings to cost \$7000, and C. A. Snow will erect two two-story brick dwellings and store buildings to cost \$3500 each.

Washington, D. C.—Hospital.—W. E. Speir has been awarded contract at \$184,000 for erection of the proposed three-story addition to Soldiers' Home Hospital, for which W. S. Poindexter was previously reported as having prepared plans.

Washington, D. C.—Pythian Hall.—Contractor Welsley of 507 Twelfth street N. W. has been awarded contract for erection of the proposed \$30,000 Pythian hall.

Washington, D. C.—Union Station.—G. H. Burnham & Co. of Chicago, Ill., who designed the union station to be used by Pennsylvania and Baltimore & Ohio railroads, have decided to act as general contractors and have awarded contracts for separate parts of the work. Thompson-Starette Company of Chicago and New York will do the granite, brick and foundation work; American Bridge Co. of Chicago the ironwork; Vermont Marble Works of New York, marble work, and McNulty Bros. of Chicago the plastering work. Entire improvement will cost about \$14,000,000, of which \$4,250,000 will be for building, exclusive of structural iron and approaches; structural work will cost about \$500,000.

Washington, D. C.—Church.—Maryland and Pennsylvania Conference of the United Brethren Church has provided \$10,000 for erection of a memorial church in Washington. Rev. O. W. Burner, 6 R street, is chairman building committee.

Waxahatche, Texas.—Library.—Bids will be opened November 3 by trustees for erection of two-story-and-basement brick and stone building for N. P. Sims Library and Lyceum according to revised plans and specifications, which can be seen at office of Smith & Moore, architects, Fort Worth, Texas; at Citizens' National Bank, Waxahatche, and at office of Stewart Moore, Dallas, Texas. Each bid must be accompanied by certified check for \$250,000. \$10,000 bond required and usual rights reserved.

Welch, W. Va.—Building.—J. H. Chambers will erect \$5000 building.

Wilmington, N. C.—Warehouse.—Seaboard Air Line Railway will probably award contract for erection of its proposed \$40,000 warehouse to J. T. Wilson of Richmond, Va.

Winnsboro, La.—Courthouse.—Franklin parish has let contract to F. B. & W. S. Hull at \$24,143 for construction of courthouse.

RAILROAD CONSTRUCTION.

Railways.

Austin, Texas.—Mr. R. H. Baker, vice-president and general manager of the Trinity & Brazos Valley Railway Co., writes the Manufacturers' Record that a preliminary survey is being made between Mexia and Beaumont, Texas, about 225 miles, via Huntsville, Saratoga and Sour Lake. Two other lines will be run between the same points, one via Trinity, Livingston, Saratoga and Sour Lake, and a third via Crockett, Groveton, Livingston, Saratoga and Sour Lake. John W. Maxey is engineer in charge of the line now being built, between Cleburne and Mexia. Some fifty miles are now in operation from Hillsboro to Mexia, and the entire distance through to Cleburne will be seventy-eight miles. The stations in order are Cleburne, Parker, Covington, Oacoala, Hillsboro, Malone, Hubbard City, Coolidge and Mexia.

Birmingham, Ala.—The incorporators of the Birmingham & Lineville Railroad Co. are S. E. Thompson, John S. Jemison, W. J. Prowell, R. H. Pearson, Robert Jemison and Vassar L. Allen of Birmingham, and R. L. Iver of Lineville, Ala. The road is to run from Lineville to Pyriton, in Clay county, and may eventually be extended to Birmingham.

It can also be extended into Tallapoosa and Randolph counties.

Bristol, Tenn.—The United Gas & Electric Co. of New York is reported to have purchased the Bristol Belt Line Railway, and will extend it.

Cedar Grove, W. Va.—The Kelley's Creek & Northwestern Railroad has completed about five miles of its main line, and is now operating between Cedar Grove and Ward.

Charleston, W. Va.—Reported that the Imboden & Odell Railroad has let the contract for grading and masonry on twelve miles of line on Blue creek, Kanawha county. The grading, which is mostly scraper work, was let to Reynolds & Sterling of St. Albans, W. Va. It is understood that the firm has sublet the masonry. The line is to run from Charleston to Summerville, thirty-five miles, and the remainder is to be let in sections as soon as the location surveys are completed. C. P. Peyton is chief engineer.

Chattanooga, Tenn.—The proposed Emory River Railroad, in which W. R. Crabtree, M. M. Hope, T. P. McMahon, Dr. S. B. Cook and B. F. Fritts are interested, is to be fifteen miles long from a point on the Emory river near Harriman to the main line of the Cincinnati Southern. The road is intended to reach coal and iron lands owned by the incorporators, and it is expected that a survey will soon be begun.

Chicago, Ill.—The Illinois Central Railroad Co. has voted to issue not more than \$20,000,000 of bonds to fund the company's debt and to provide for improvements.

Chicago, Ill.—The report that the Yazoo & Mississippi Valley Railroad will build a line between Minter City and Belzona or Silver City, Miss., is officially denied.

Chicago, Ill.—President E. P. Ripley of the Atchafalaya, Topeka & Santa Fe Railway is reported as saying that a 250-mile cut-off will be built between Belen, N. M., and Texico, Texas. J. Dun is chief engineer at Chicago.

Chihuahua, Mexico.—Mr. C. L. Graves, general manager Chihuahua & Pacific Railroad, writes the Manufacturers' Record confirming the report that a preliminary survey has been made from El Carpio to Rincon, about sixty miles, for an extension, under the direction of H. W. Edwards, chief engineer. It has not yet been decided to construct the line.

Coalgate, I. T.—The Lehigh Traction Co., C. W. Copeland, president, has been granted an extension of thirty days to begin work on the electric interurban railway. Work on the Coalgate & Atoka line will, it is reported, begin immediately.

Denison, Texas.—The Denison & Sherman Railway Co. has increased its capital from \$100,000 to \$200,000.

Fields, La.—A meeting of stockholders of the Sanders-Trotter Tram Co., Limited, is to be held on November 25 to increase the capital from \$60,000 to \$125,000. W. J. Sanders is president, and W. C. Smith, secretary.

Frankfort, Ky.—The Frankfort & Versailles Traction Co., which recently purchased the Frankfort & Suburban Street Railway and proposes to extend it to Versailles, has been incorporated, with \$300,000 capital, by Albert Norvale and John S. Dewitt of Cincinnati, Chas. R. Crane of Springfield, Ohio; Wm. S. Lougee of Cleveland, Ohio; John T. Buckley, J. C. Noel, J. H. Haezelrigg and D. L. Haezelrigg of Frankfort.

Galveston, Texas.—Reported that the Gulf, Colorado & Santa Fe Railway has awarded to Contractor Burns of Saratoga the work of building its proposed extension from Votaw to the Saratoga oil fields.

Gauley Bridge, W. Va.—The Nicholas Short Line, proposed, has deferred construction for the present. C. C. Sharp and others are interested.

Guthrie, O. T.—The incorporation papers of the Pan-American Railroad Co., which were filed two months ago, have, it is stated, been returned to the stockholders for the alleged reason that the incorporation fees are still unpaid.

High Shoals, Ga.—Residents of High Shoals are reported interested in a plan to build an electric railway from this place to Athens, sixteen miles, via Whitehall, Watkinsville and Bishop.

Houston, Miss.—J. E. Johnson & Co. have the contract for cutting right of way for the Mobile, Jackson & Kansas City Railroad from a point five miles south of Houston to Pontotoc, Miss.

Jennings, La.—Construction on the Jennings & Northern Railroad is progressing rapidly, and it is expected that the line will be in operation by the end of the year.

Kansas City, Mo.—Charles A. Loomis, general counsel for the proposed Missouri Central Railroad, is reported as saying that the

line is being surveyed from Brookfield to Glasgow and from the latter point to St. Louis, but it has not yet been determined whether the line will run north or south of the river to Kansas City. New York capitalists interested in the project are soon to visit Slater, Mo., and other points in the State.

Kansas City, Mo.—The Stockton South-eastern Railroad Co., lately incorporated, has elected G. F. Wolfe as president and general manager and G. A. Loeffler as secretary and treasurer. Wollman, Solomon & Cooper are general counsel. Temporary headquarters are at 303 Temple Block, Kansas City. The general offices are to be at Stockton, Mo. A 20-mile survey has been made, and construction, it is stated, will begin immediately between Eldorado Springs and Stockton, the line being designed to run into the Arkansas mining district, a total distance of 145 miles.

Knoxville, Tenn.—J. C. Monday, who has been doing the masonry work on the Tennessee Railroad's extension from Clarksville, Tenn., to Hopkinsville, Ky., is reported as saying that by the first of January trains will be running through from Nashville to Hopkinsville.

Lawton, O. T.—The Lawton, Wichita Mountain & Western Electric Railway Co. of Lawton has been incorporated to build a line from Lawton to Fort Sill, and also from Lawton to Lone Wolf, seventy-five miles. The incorporators are C. W. Johnson of Montgomery, Ala.; S. P. Brubage of St. Louis, Mo.; J. R. Brattain of Carthage, Mo.; Edward F. Mitchell of El Reno, D. H. Rankin, R. A. Hubbard, Charles Mitschrich and J. H. Russell of Lawton.

Louisville, Ky.—The Louisville & Nashville Railroad is reported to be building a spur to coal lands near Pennington Gap, in Lee county, Kentucky.

Louisville, Ky.—Reported that the Atlanta, Knoxville & Northern Railroad (Louisville & Nashville system) will build a branch from Talking Rock to Marietta, Ga. R. Montfort is chief engineer at Louisville.

Louisville, Ky.—An officer of the Louisville & Nashville Railroad informs the Manufacturers' Record that he knows of no plan to extend the Oliver Springs branch to Harriman, Tenn.

Manistee, Ala.—The Manistee & Repton Railroad has under construction an extension of six miles from Silverville to Monroeville, Ala., and it will be completed in about two months.

Maryville, Mo.—Surveys are under way for the proposed Maryville & St. Joseph Electric Railway, which is to run from Parnell, Mo., via Maryville to St. Joseph, Mo., sixty miles. Among those interested are J. W. Thompson, R. M. Bradbury and Stephen H. Kemp.

Nacogdoches, Texas.—Work has begun on the right of way for the proposed railroad from the Hayward Syndicate's mill at Nacogdoches to Oil City. It will run on the bed of the old Dallas & Red River Valley Railway, which was graded many years ago.

Navasota, Texas.—The projected railroad from Trinity to Smithville, a distance of 137 miles, is now supported by the towns of Trinity, Huntsville, Anderson, Navasota, Brenham, La Grange and Smithville. J. J. Felder is chairman of the committee, and J. W. Schumacher, secretary, at Navasota.

New Orleans, La.—James Z. George of New Orleans is reported to be interested with A. T. Hurd and R. H. McNaught of New York in the plan to build a railroad from New Iberia, La., to Natchitoches, La., about 200 miles. J. H. McNaught of New York is said to be at the head of the deal.

Norfolk, Va.—W. H. Robertson, formerly general manager of the Chesapeake Transit Co., will, it is reported, be in charge of a new electric line to be built between this city and Suffolk, Va. A survey has already been made between the latter place and Portsmouth.

Norfolk, Va.—O. D. Jackson, president of the Jamestown, Williamsburg, Yorktown & Hampton Electric Railway Co., is reported as saying that the money has been secured to build and equip the line and that it will be constructed and in operation before 1907.

Philadelphia, Pa.—The Philadelphia, Baltimore & Washington Railroad (Pennsylvania system) is reported to have purchased waterfront property on the south side of Boston street, at the foot of Montford avenue, in Baltimore, Md., for a freightyard. Wm. H. Brown is chief engineer at Philadelphia.

Oaxaca, Mexico.—The Oaxaca & Ejutla Railroad proposes to build an extension from the main line to Zimatlan. Juan Mateos is chief engineer.

Pennington Gap, Va.—The 15-mile extension of the Pocket Railroad into the Pocket coal fields is two-thirds completed. It is all

to be open for traffic by December 1. Another extension of the Louisville & Nashville is projected from Pennington Gap.

Pensacola, Fla.—The Pensacola, Alabama & Western Railroad Co. gives notice that it will apply for a charter to build a line from Pensacola north to the Alabama boundary, about forty-five miles. The directors are H. L. Covington, president; A. Greenhut, vice-president; W. J. Forbes, secretary and treasurer; A. M. Avery, H. H. Boyer, W. A. D'Alemberte and Morris Bear. John C. Avery is also interested. All the incorporators are of Pensacola. The company has also applied for a franchise in the city.

Pittsburg, Pa.—The Ferguson Contracting Co. of Pittsburg and New York has, it is reported, been awarded the contract for building an extension of the Coal & Coke Railway, formerly the Charleston, Clendenin & Sutton, from Bellington, W. Va., to connect with the Chesapeake & Ohio Railway.

Prairie, Ky.—The Sandy Valley & Elkhorn Railroad has been granted a franchise from Prairie through the Elkhorn coal region to Whitesburg, Ky. A contract to build the road is to be let immediately.

Raceland, La.—The Louisiana & Southeastern Railway proposes to begin work early next year on its proposed line from Thibodaux, La., to Cut-Off, thirty-five miles. Jules Godchaux is president at New Orleans; C. S. Matthews, vice-president, and E. F. Dickinson, secretary and treasurer at Raceland.

Raleigh, N. C.—The Capital Construction & Development Co. of Raleigh has been chartered, with \$50,000 capital, to construct the Raleigh & Pamlico Railroad from Raleigh to Washington, N. C. The incorporators of the construction company are E. B. Barbee of Raleigh, T. M. Washington of Wilson, N. C., and S. H. Crocker of Stantonburg, S. C.

Richmond, Va.—The Chesapeake & Ohio Railway proposes to build a thousand yards of additional siding at Barboursville. Double-tracking is in progress from Barboursville to the Guyandotte bridge.

Sapulpa, I. T.—The Central Coal & Coke Co. proposes to build a branch about seven miles long from the main line of the Frisco near Red Fork to Coal Creek.

Savannah, Ga.—The Central of Georgia Railway is reported to have made arrangements to build a branch from Lyerly to Mill Creek, Ala. It is also reported that the company will build an extension to Gadsden, and possibly to Birmingham.

Shreveport, La.—The Louisiana Railway & Navigation Co. proposes to build an extension from Port Hudson to Angola, about thirty-two miles. P. McVivried is vice-president and general manager.

St. Louis, Mo.—H. T. McMurray of St. Louis and others are interested in the Missouri & Kansas Construction Co., which has the contract for building that part of the Colorado, Oklahoma & Texas Railroad from Duncan, I. T., to Lawton, O. T. The line is to run from Pueblo, Col., to Denison, Texas, touching Hobart and Ardmore in addition to the points already named.

St. Louis, Mo.—The St. Louis County Connecting Railway and the St. Louis County Railway have been granted extensions of time to complete their lines, the former until November 3, 1904, and the latter until March 1 next.

Sulphur Springs, I. T.—The Sulphur Springs Railway Co. proposes to issue \$500,000 of bonds, and has filed a mortgage for that amount for building its line eight and one-half miles long, from Sulphur to Scullen.

Tyler, Texas.—The St. Louis Southwestern Railway is now laying track on the four-mile extension of the Lufkin branch from its present terminus to Monterey.

Velasco, Texas.—The Velasco, Brazos & Northern Railway is reported to have secured a concession of forty-five acres of land in Velasco for terminals. W. C. McLelland is general manager.

Vera Cruz, Mexico.—The Miller Plantation Co. proposes to build a railroad about ten miles long, and is reported to be considering bids.

Walnut Ridge, Ark.—Track is being laid on the electric railway between Walnut Ridge and Hoxie.

Washington, D. C.—The Southern Railway will, it is reported, build an extension from North Wilkesboro, N. C., up the Yadkin river to a point near the Patterson Mill, in Caldwell county. W. H. Wells is engineer of construction.

Washington, D. C.—The Colton Company has been incorporated to conduct and contract for railroads; authorized capital \$40,000,000. The incorporators are James R. Porter, Charles W. Emberg and James A. Black.

Washington, D. C.—The Southern Railway

Co. is reported to be surveying for a line between Blossburg and Ensley, Ala. It will be about ten miles long.

Watson, N. C.—Surveys for a railroad are reported under way from Watson to Snow Hill.

Wheeling, W. Va.—The Wheeling & Elm Grove Railway has nearly completed the extension from Valley Grove to West Alexander. Only about 200 yards of track remain to be laid.

Winnfield, La.—The extension of the Louisiana & Arkansas Railway from Winnfield to Jena, 38.7 miles, has been graded, and the track is now being laid.

Wise, Va.—The working force on the five-mile extension of the Virginia & Kentucky Railroad from Ramsey Station to Norton, the terminus of the Louisville & Nashville Railroad, has been increased to 5000 hands. This line is to be extended into the Pound River coal region soon.

Street Railways.

Kansas City, Mo.—Ford, Bacon & Davis, engineers, inform the Manufacturers' Record that no plans for the extension of the Metropolitan Street Railway to Forest Hill Cemetery has been made.

Longview, Texas.—The Longview & Junction Street Railway Co. will, it is reported, extend its line to Rembert's Park, half a mile from town, and equip it with electricity.

New Orleans, La.—The New Orleans Railways Co. proposes to build another extension.

Sherman, Texas.—Mayor Fleider has received a letter from a Cincinnati firm proposing to build a street railway with cars operated by gasoline motors instead of by electricity.

Shreveport, La.—The Shreveport & Suburban Railway Co. is reported to be endeavoring to purchase the horse-car line at Lake Charles, La., for the purpose of converting it into an electric railway. H. Headburg is president, and C. L. Bland, secretary and treasurer, of the former.

St. Louis, Mo.—A bill has been introduced in the city council for an elevated roadway and subway, the latter to run from Third and Washington avenues to Eighteenth and St. Charles streets, the elevated road to continue from the latter point to Taylor avenue, and thence to Watson road. Those interested are H. K. Gilman of the Western Electric Supply Co., J. E. Longworth of the American Storage & Moving Co., S. L. Langdale, capitalist, and H. S. Doyle, civil engineer.

St. Louis, Mo.—Fruin & Colnon are the lowest bidders for the extension of the municipal railway from Baden to Bissell's Point, their bid being \$45,404.75. The board of public improvements has the awarding of the bids.

Winston-Salem, N. C.—The Fries Manufacturing & Power Co. will, it is reported, extend the West End street-car line 1200 feet and put in a siding.

Machinery, Proposals and Supplies Wanted.

Manufacturers and others in need of machinery of any kind are requested to consult our advertising columns, and if they cannot find just what they wish, if they will send us particulars as to the kind of machinery needed we will make their wants known free of cost, and in this way secure the attention of machinery manufacturers throughout the country. The MANUFACTURERS' RECORD has received during the week the following particulars as to machinery that is wanted.

Ball Mill.—See "Machine Tools."

Boiler.—See "Woodworking Machinery."

Boilers.—Anthracite Machinery & Supply Co., Allentown, Pa., wants four 125 or 150-horse-power horizontal return tubular boilers, also four 6-10-15-20 vertical boilers and hoisting engine, second-hand.

Boilers.—See "Engines, etc."

Boilers.—See "Cannery Equipment."

Bridges.—Blake Dupree, county judge, Houston, Texas, will open bids November 10 for construction of two wooden pile-driven highway bridges. Plans and specifications, with full information, can be seen at office of John W. Maxcy, consulting engineer, 205 Bonz Building, or at office of county clerk of Harris county. Each bid must be accompanied by certified check for \$100. Usual rights reserved.

Bridge.—Proposals are invited for construction of a 60-foot crescent wooden Howe truss bridge and pile-driven trestle approaches across Cypress bayou. Full plans and specifications can be seen at office of John W. Maxcy, consulting engineer, Houston, Texas, or at office of county clerk of Harris county. Usual rights reserved; Blake Dupree, county judge.

Bridge.—P. A. Hunter, San Patricio, Texas, will open bids in November for construction of steel bridge across Pat Quinn slough, 45-foot span and two approaches (dumber) 112 feet long each, 12-foot roadway. County commissioners' court of San Patricio county will reserve usual rights.

Bulkhead.—Board of Awards, care of city register, City Hall, Baltimore, Md., will receive proposals until November 4 for rebuilding bulkhead at foot of West Falls avenue. Certified check for \$50 must accompany each bid. For specifications apply at harbor board office; N. H. Hutton, harbor engineer. Usual rights reserved.

Bulkheads, etc.—B. Gray Tunstall, chairman S. S. & D. Com., Norfolk, Va., will open bids November 3 for extension of City Hall avenue from Granby street to west side of Newton street, including building of proper bulkheads, filling in old canal and extending the 48-inch cast-iron drainage pipe to the new bulkhead. Plans and specifications may be seen at office of city engineer; \$10,000 bond required and usual rights reserved.

Candy Machinery.—Leon B. Sutton, Kingston, N. C., wants to correspond with manufacturers of candy machinery.

Cannery Equipment.—E. A. Lancaster, Greenville, Tenn., wants prices on complete equipment for cannery, including boilers, etc.

Canning Machinery.—Florida Vegetal Development Co., Tallahassee, Fla., desires information regarding machinery and supplies for cannery.

Card-index Machinery.—The Gazette Printing House, Gastonia, N. C., wants catalogues and prices of machinery or devices for cutting tabs and guides on margin of cards used in card-index systems.

Cotton-mill Machinery.—Cardwell Machine Co., Richmond, Va., wants addresses of manufacturers of machinery for making cloth for making bagging for press bales, also for making rope for fastening them.

Couch-lid Lifters.—Chattanooga Couch Co., 711 Georgia avenue, Chattanooga, Tenn., wants prices on couch-lid lifters.

Drill.—Battley Machinery Co., Rome, Ga., is in the market for second-hand medium-sized steam rock drill.

Drying Plant.—Southern Coffin & Casket Co., Knoxville, Tenn., wants bids on dry-house apparatus, hot-air fan system.

Electric Wiring.—See Building note under Holly Springs, Miss.

Electric Wiring.—Cook Hotel & Excursion Co., St. Louis, Mo., wants prices on electric wiring for hotel with capacity for 5000 guests.

Elevator.—Dan A. Mossman, Huntington, W. Va., wants hydraulic water-power elevator for three stories and basement to raise 2000 pounds.

Embossing Equipment.—See "Printing Plant."

Engine.—See "Woodworking Machinery."

Engine.—See "Boilers."

Engines, etc.—Anthracite Machinery & Supply Co., Allentown, Pa., wants to buy five 125 or 150-horse-power, two 100-horse-power horizontal return tubular boilers, one 40-horse-power locomotive boiler, one four-horse-power vertical boiler, one 16x16 high pressure, 14x12, 5x4 pumps; also lot of tank pumps and high pressure, one 25-horse-power center-crank automatic engine, one 50 to 80-horse-power side-crank horizontal engine, one four, five or six-inch discharge centrifugal pump, one 200-horse-power upright or water-tube boiler; must be second-hand, but in perfect condition; also wire hoisting rope and cables all sizes.

Etching Plates.—Southern Saw Works, Atlanta, Ga., wants to contract for etching plates that will by a modern process make quick and inexpensive transfers.

Extract Equipment.—Florida Vegetal Development Co., Tallahassee, Fla., wants information regarding the manufacture of turpentine from pine stumps.

Fire Engine.—John E. Maguire, superintendent city fire department, Savannah, Ga., will open bids November 11 for furnishing f. o. b. cars Savannah one extra first size or double extra first size steam fire engine, with capacity of 1500 gallons per minute; boiler to be plain or finished with nickel-plated jacket, with all tools and other modern appliances; dome, machinery and all exposed parts to be nickel-plated; three-horse

hitch complete with necessary heater connections attached; one small and two large sections with Savannah standard thread. Certified check for \$300 must accompany each proposal. Usual rights reserved.

Fire-escapes.—Henry B. F. Macfarland, Henry L. West, H. C. Newcomer (acting), commissioners, Washington, D. C., will open bids November 3 for furnishing and erection of two iron spiral slide fire-escapes at the Jefferson school building. Necessary information may be obtained at the office of commissioners.

Gas Piping.—See Building note under Camp Eagle Pass, Texas.

Granotoid Walk.—Proposals will be opened November 7 at office of depot quartermaster, U. S. A., Room 807, Equitable Building, Baltimore, Md., for furnishing material and labor required in construction of granotoid walk at Fort Howard, Md. United States reserves usual rights. General instruction to bidders and all information furnished on application to M. G. Splinks, artillery corps, constructing quartermaster.

Heating Apparatus.—See Building note under Holly Springs, Miss.

Heating Apparatus.—Hospital of Frederick County Medical Society, Frederick, Md., wants prices on steam or hot-water heating apparatus and hospital furniture.

Hoisting Rope and Cables.—See "Engines, etc."

Hospital Furniture.—See "Heating Apparatus."

Heating Apparatus.—See Building note under Camp Eagle Pass, Texas.

Hydrants.—See "Water-works Equipment."

Kilns.—See "Machine Tools."

Leather-printing Equipment.—See "Printing Plant."

Levee Construction.—Judge Harris, chairman lake county levee board, Tiptonville, Tenn., will open bids November 1 for construction work on Lake county part of the Reelfoot levee district, receiving bids on 40,000 cubic yards, more or less, of dirt and the repair work on levee now built. Bids will be received on construction and repair separately. Usual rights reserved. Particulars may be had by application to Judge Harris or to Richard d'Ailly, chief engineer, Tiptonville.

Machine Tools.—L. E. Kennedy & Co., 17 Broadway, New York, N. Y., want to purchase No. 7 Schmidt ball mill or any other good ball mill; also some second-hand rotary kilns.

Mill Supplies.—See "Woodworking Machinery."

Mill Supplies.—J. E. Shelton Box Co., Winston, N. C., will need some shafting, pulleys and belting.

Mill Supplies.—The Supply Co., 108 Bourbon street, New Orleans, La., wants to arrange for representing makers of rails, track accessories, mill supplies, etc.

Mining Equipment.—See "Railway Equipment."

Mining Equipment.—Glendale Mining Co., Marion, Ky., will later on be in market for mill to crush and separate zinc and lead ore.

Oil Machinery.—Val Hoerner, Box 125, Dickinson, N. D., wants addresses of manufacturers of oil machinery.

Paints and Oils.—See "Tank and Tower Plant."

Pipe.—See "Tank and Tower Plant."

Pipe.—See "Water-works Equipment."

Piping (Terra-Cotta) Machinery.—See "Terra-cotta Piping Machinery."

Piping.—J. W. Guyton, Lavita, Texas, wants to correspond with manufacturers of piping.

Plumbing.—See Building note under Camp Eagle Pass, Texas.

Plumbing.—See Building note under Holly Springs, Miss.

Power Plants.—See "Railway Equipment."

Printing Outfit.—Pulaski Publishing Co., W. H. Bramblitt, president, Pulaski, Va., will later on want prices on printing outfit and job-office supplies.

Printing Plant.—Southern Novelty Manufacturing Co., 297 Main street, Memphis, Tenn., will be in market for printing and embossing machinery.

Pumps.—See "Engines, etc."

Railway Equipment.—Cardiff Coal Co., Charleston, W. Va., will want mine rail, building material and power plants.

Railway Equipment.—Butler Coal Mining Co., Oliver Springs, Tenn., wants T iron rails, mining cars and wire rope.

Railway Equipment.—W. A. Whitehead & Son or White Lake Tie & Lumber Co., Wil-

ington, N. C., want geared locomotive, seven to twelve tons, for wooden-rail 42-inch gauge, track 2x6 double; prompt shipment; might use 36-inch gauge.

Railway Equipment.—Northern Illinois Electric Railway Co., G. H. T. Shaw, president, Dixon, Ill., is in the market for material and supplies of every description.

Railway Supplies.—See "Mill Supplies."

River Improvement.—Clinton B. Sears, lieutenant-colonel, engineers, United States engineer office, Nashville, Tenn., will open bids November 9 for construction, delivery, etc., of four pairs steel lock gates, filling valves, etc., for Locks A and No. 1, Cumberland river. Information furnished on application.

Rock-crushing Machinery.—C. B. Goetchius, Board street, Rome, Ga., wants to correspond with manufacturers of rock-crushing machinery.

Rock Drill.—See "Drill."

Rope Machinery.—See "Cotton-mill Machinery."

Shoe-lace Machinery.—G. W. Crist, Montgomery, Ala., wants machinery for making shoe laces.

Strap Manufacturers.—Crescent Shoe and Heel Plate Works, Richmond, Va., wants to correspond with parties making a specialty of cheap leather straps, such as trunk straps, shoulder, shawl, book and other straps.

Street Paving.—R. M. Clayton, city engineer, Atlanta, Ga., will open bids November 2 for paving 3000 square yards of street with sheet asphalt. Certified check for \$500 must accompany each bid. Specifications can be seen at office of city engineer. Usual rights reserved.

Tank.—T. E. True, C. Q. M., Fort Brown, San Antonio, Texas, will receive sealed proposals in triplicate until November 19 for erection of 50,000-gallon steel tank on 50-foot trestle at Fort Brown. Information furnished on application. United States reserves usual rights.

Tank and Tower.—See "Water-works Equipment."

Tank and Tower Plant.—W. J. Hatcher, Johnston, S. C., wants quotations on sheet, galvanized and black metal, galvanized and

black angle steel, tank lugs, galvanized and black wrought pipe, paints and oils.

Terra-Cotta Piping Machinery.—Archibald A. Marx, Box 127, New Orleans, La., wants addresses of manufacturers of machinery for making terra-cotta sewer pipe.

Tin-can Manufacturers.—Asheville Milling Co., Asheville, N. C., wants to correspond with manufacturers of tin cans.

Veneer Machinery.—Florida Vegetal Development Co., Tallahassee, Fla., wants information regarding veneer machines.

Water-works Equipment.—Halls Electric Light & Water-Works Co., Halls, Tenn., will need 63-foot steel tower and 15,000-gallon steel tank, 300 feet galvanized six-inch pipe for well and pump for same, several tons of four-inch cast-iron water pipe and three-inch cast-iron water pipe, couplings and crossings, fire hydrants and water hydrants.

Water-works Improvement.—Memphis Artesian Water Department, Lawrence Simpson, general superintendent, Memphis, Tenn., will open bids November 2 for furnishing 187 tons 16-inch cast-iron pipe, 188 tons 12-inch cast-iron pipe, 165 tons six-inch cast-iron pipe, eight tons special castings, fifteen tons pig-lead and 650 barrels of American Portland cement, to be delivered f. o. b. cars Memphis, Tenn. Proposals must comply with specifications on file in office of water department, which will be furnished on application. Usual rights reserved.

Wood-extract Plant.—See "Extract Equipment."

Woodworking Machinery.—See "Tanks and Towers."

Woodworking Machinery.—Brown Wagon Co., R. L. Brown, general manager, Macon, Ga., will want engine and boiler, woodworking machinery, elevators, belting, pulleys, shafting, boxes, hangers, etc., for wagon factory.

Woodworking Machinery.—E. B. Allen, Nashville, Tenn., is in market for machinery to make wooden pipes.

Woodworking Machinery.—John C. Duncan, 316-318 Jackson avenue, Knoxville, Tenn., wants dealers' prices on all kinds of new and second-hand woodworking machinery, including sash and blind machinery for immediate shipment, and a jig or scroll saw.

ped with automatic couplers and Westinghouse air-brakes, for the Enterprise Lumber Co.

Manufacturing Property Offered.

Anyone wanting a manufacturing property in New England is advised to address E. W. Clarke, 8 Lincoln avenue, Westerly, R. I. Mr. Clarke offers to sell or rent a two-and-one-half-story mill 38x138 feet, with good water-power, shafting, boiler-house and boilers, dye-house with proper water supply, picker-house, fourteen tenement cottages, etc. Sent for full details.

Southern Mineral Properties.

There are many mineral properties in the South awaiting development. Some of them are also excellent opportunities for investors. In McDowell county, North Carolina, on the Southwestern Railroad, there is a tract of 3700 acres for sale. This land contains large quantities of hard and soft timber, also water-powers, hard and soft iron ores and indications of copper. J. C. McGaskill of Maxton, N. C., can be addressed for further description.

Flexible Conveyors of Steam, etc.

Many avenues of industrial activity require that steam, air or liquid be conveyed for use. Meeting this requirement, flexible piping has been introduced, and serves well its purpose in thousands of instances. Users of such conveyors may be interested in knowing that the Moran Flexible Joint Co. makes in all sizes the Moran Flexible Joint for all purposes requiring a flexible conveyor of steam, air or liquids. The company's offices are at 152 Third street, Louisville, Ky.

A Solid Steel Scraper.

Included in grading equipments is usually that useful appliance, the scraper. A scraper to work in any kind of soil, whether plowed or not, and entering the ground as readily as a plow, is in steady demand. This want is being supplied by the Kilbourne & Jacobs Manufacturing Co. of Columbus, Ohio, with the "Boss" solid steel scraper. It is not injured by exposure to the weather, and has nothing about it to get out of repair. It is without joint or seam, and is made of a single sheet of steel pressed into the most suitable shape.

Consulting About Southern Work.

Henry E. Knox, Jr., Southern manager at Charlotte, N. C., for the Engineering Company of America, has been at the offices of the company, 74 Broadway, New York, for several days in consultation in regard to work in the South. Mr. Knox makes a specialty of artesian wells and subsurface water supplies. The company, under the direction of Mr. Knox, has just completed the installation of a water-works system for the Belton (S. C.) Mills. Similar plants are to be constructed by the company at Anderson and Greenville, S. C.

Hornaday & Co.'s New Department.

Southern communities will be interested in the announcement which Messrs. J. P. Hornaday & Co. have made. The firm states that it has added a railway and construction department in charge of a competent representative. Hornaday & Co. will give special attention to building street railways, electric-light plants and water-works, especially in the South. They have associated with them one of the large contracting firms of Chicago, and are in a position to take contracts for the construction of meritorious propositions. Offices at 1108 Traction Building, Cincinnati.

A Recognized Authority.

When Noah Webster set about compiling an American dictionary of the English language he did better even than he expected. He did a great deal to make possible the present purity and high standard of language used in the United States. From time to time his original work has been revised and enlarged by minds even more competent than his own, till today in the form of Webster's International, to which has been added 25,000 new words, bringing it thoroughly up to date, it is a recognized lexicon attested by testimonials from eminent scholars, statesmen, diplomats, judges and authors throughout the world.

Electrical Growth in the South.

The ever-growing field for the profitable investment of capital in the electrical industries is very attractive, especially in the South, where electricity is so generally used in the rapid development of the present time. The Piedmont Electric Co. of Asheville, N. C., which incorporated a year ago to engage in electrical contracting, construction work and the supply business, reports a very successful year's business, both in installation of plants and furnishing supplies, of which a large and complete stock is carried. That company is agent for the well-known Premier lamps and Monopex telephone systems for factories, which have had a large sale throughout the Piedmont section.

The Supply Company, New Orleans.

Buyers of railway, compress and special mill supplies in the Southern territory will in future have another source of supply from New Orleans. This new service will be given by the Supply Company, which has just been organized by Messrs. Wm. P. Miller, Chas. L. Smith, Chas. D. Hill and others for the purpose of dealing in steel rails, track accessories, general railway and mill supplies, etc. The company can at present furnish prompt shipments of 16 to 85-pound rails at very low prices, and solicits request for estimates. It is also desirous of arranging to represent leading manufacturers in the lines mentioned. Headquarters have been located at 108 Bourbon street, New Orleans.

A New Incandescent Lamp.

All users of the electric light who seek to obtain the fullest possible service from incandescent lamps are advised that a new lamp, the Imperial, is being introduced. A brief reference to the great merits claimed for this new invention will serve to interest those acquainted with incandescent lamps and their life. It is stated that the Imperial Incandescent Lamp runs along at about 90 per cent. of initial power for some 500 hours; then after 800 hours it crosses the 80 per cent. line; a few hours later it burns out. These qualities approach perfection, and the new lamp is expected to be called for in large quantities during the next year or two. The Ewing-Merkle Electric Co., St. Louis, is general selling agent for the manufacturer, Bryan-Marsh Company.

Eddy Valve Works Enlarging.

The demand for valves and kindred product of the Eddy Valve Co., Waterford, N. Y., is causing that company to enlarge its plant. Contracts for a considerable quantity of machinery have been awarded, and a new foundry 100x150 feet is being erected. The new equipment includes 15-ton electric traveling crane of 67-foot span, 54 Paxson cupola equipped with a positive pressure blower, a hot-air

heating apparatus, etc. Power plant will consist of a 100-horse-power Harrisburg engine and a 75-kilowatt General Electric generator. Pneumatic chipping hammers and molding machines will be used extensively. In the machine shop is being placed new boring and turning mills of large and small capacity, lathes, grinders, etc. When the extensions are completed the plant will have been doubled in size.

Want to Reduce Coal Bills?

The reduction of coal bills is something in which thousands are interested. One of the ways by which the cost of fuel can be kept at a minimum is the careful selection of the type of steam and hot-water boiler to install for house heating. Modern boilers as perfected by inventors and offered by American manufacturers are fulfilling the most exacting requirements of users. The Monitor Steam and Hot-Water Boilers have been very successful. They are built by the Monitor Steam Generator Manufacturing Co., which has an office and salesroom in the Brewers' Exchange Building, Baltimore, and is developing an extensive trade throughout the South. The company's home office and works are at Landisville, Pa. Write for catalogue giving full details as to the economies and efficiencies of the Monitor type.

General Machinery and Supplies.

Increasing trade in Southern industrial activity of all kinds is constantly bringing about the establishment of new sources of supply for contractors and manufacturers. When a man is well acquainted with the class of operators to whom he is about to cater it augurs well for the development of a good business in machinery and supplies. Herman Kokosky, who recently announced his intention to furnish general machinery and supplies, is well posted with the railroad and manufacturing interests of Louisiana, Texas, Mississippi and Alabama, and expects to develop an extensive trade in those States. He will arrange to represent makers of materials for constructing railroads and buildings, tool and bar steel, belting, saw-mill machinery and supplies generally. Offices for the present are at 157 Baronne street, New Orleans.

Welcomed by Employees.

Amicable relations between employer and employee are always to be viewed with satisfaction. They indicate that the employer has consideration for his men, and that they find it not irksome to be in his service. A case in point is seen in the return of Charles L. Allen from Europe. Mr. Allen is well known as secretary and general manager of the Norton Emery Wheel Co. of Worcester, Mass. Upon his arrival at the plant he found the men had decorated the grimy shops with autumn foliage and flags. In the evening the 400 employees presented Mr. Allen a heavy silver cup, mounted on ebony, with three buckhorn handles decorating its sides. Inscribed upon it was: "Presented to Secretary and General Manager Charles Lucius Allen by the employees of the Norton Emery Wheel Co. on his return from Europe, October 7, 1903." A general good time was afterwards enjoyed by the large party in completing the evening. Mr. Allen can certainly feel proud of the demonstration in his honor and the gift.

The Saving in Albany Grease.

Messrs. Adam Cook's Sons, 313 West street, New York, sole makers, have long claimed that the use of Albany Grease for lubricating machinery of all kinds will cut the oil bills in half. Evidence that it will accomplish even a greater saving than this is given in the following letter under date of October 10 from L. G. Mills, chief engineer of the Knoxville (Tenn.) Ice Co.: "The Albany Grease Cups you sent me I put on some of our different machines, and have had very good results from them. Our machines have run harder and longer this season than ever before, and with eighty pounds of grease and your cups I cut the oil from twelve barrels last season to four barrels this season. For instance, our electric-light engine, running at 329 R. P. M., always took a gallon of oil a night, and it was hard to keep cool bearings with that amount. I put your cups on this engine in June, and have only filled them once since then, and at no time have the bearings showed any sign of heating. It is the same on our large machines, and I will say that your grease has done the work of whatever bearing I have used it."

Acme Knitting Machinery.

The knitting industry is steadily growing, and mills are continually being added throughout the country. A number of plants have been located in the South and established mills have been enlarged, thus indicating the advance of knit-goods manufac-

INDUSTRIAL NEWS OF INTEREST.

Wants to Cut Lumber.

Arrangements are being made to cut a large lot of pine, oak and poplar. This offers an opportunity to the owner of a lath, stove and heading mill to form partnership for the work. For particulars address J. H. Ogburn of South Hill, Va.

Ball Engines Sold.

Sheridan-Iron Works, Champlain, N. Y., has recently ordered a 70-horse-power direct-connected engine, and the city electric-light plant at Schuyler, Neb., will install a 175-horse-power engine. These engines will be furnished by the Ball Engine Co. of Erie, Pa.

Method of Making Charcoal, etc.

An experienced business man in Canada is wanted to secure the patent rights and exploit same in methods for making charcoal, etc. The United States patents have been obtained. Full information can be obtained by addressing F. W. Newberger, Stempers, Fla.

For Allen Soldering Sticks.

Users of soldering sticks and the other products of the L. B. Allen Co. of Chicago, Ill., are advised that Francis Granger, 26 Cortlandt street, New York, has been appointed the sole New York representative of the company. Buyers will find that Mr. Granger is prepared to supply promptly all orders in his territory.

Sales Manager for Grant Balls.

T. J. Heller, formerly New York agent for the Federal Manufacturing Co.'s steel ball department, has taken the management of the sales department of the Standard Roller Bearing Co., which recently bought the steel ball business of the Grant Ball Co. Mr. Heller's headquarters are with the company at Forty-eighth street and Girard avenue, Philadelphia.

Southern-Built Railroad Cars.

Southern works are assisting to supply the demand for cars and other railroad equipment to a considerable extent. The latest large contract given to a Southern manufacturer is that which the Georgia Car Co. of Atlanta has received. This company is to build thirty-two standard-gauge flat cars forty feet long, 50,000 pounds capacity, equip-

ture in that section. The Mayo Knitting Machine & Needle Co. of Franklin Falls, N. H., has furnished a large part of the knitting equipment purchased during the past several months. This company has a large plant at Franklin Falls, N. H., and for years has been successful in designing and building knitting machines. It has lately received the following large contracts: 400 Acme fully automatic hosiery knitters for the Durham Hosiery Mills, Durham, N. C., making nearly 700 of Mayo make now in that plant; 25 Acme knitters for a new mill at Madisonville, Tenn.; 25 for the Royal Knitting Co., Mt. Vernon, Ill.; 170 for Cooper, Wells & Co., St. Joseph, Mich. A number of machines have also been ordered by P. K. Green of Winston, N. C.; Blacksburg (S. C.) Spinning and Knitting Mills, Paramount Knitting Co., Chicago, and other manufacturers.

About Acetylene Lighting.

Few persons are aware how rapidly acetylene gas is becoming a standard illuminant. The fact that independent plants can be readily placed at moderate cost even in most isolated places adds greatly to the value of acetylene gas. It is estimated that more than 100,000 acetylene plants are now in daily use in the United States, including eighty town-lighting equipments. The gas is particularly adapted to factory use where color is concerned. Fabrics can be matched in color by acetylene light almost equally as well as by daylight. In metal-working it brings out the grain of the metal distinctly and adds very perceptibly to the output of the employee. The Uniform Steel Co. of Rahway, N. J., although in a district where fuel is cheap and other lights are low-priced, has found acetylene a most advantageous illuminant. Something like 20,000 feet of floor space is lighted in this factory. The Gulf Red Cedar Co. of Paint Rock, Ala., was able to use acetylene in its woodworking plant by protecting the light with gauze and globes, and was highly pleased with the results. Those who are interested can obtain full information by addressing the Davis Acetylene Co., Elkhart, Ind.

Adams-Bagnall Office at Atlanta.

No section of the country is more progressive in the development of electrical installations than the South, and for this reason many prominent manufacturers have established offices there. The establishment of new branches of well-known and successful manufacturers of electrical equipment and supplies is therefore of interest to buyers in the South. This makes it timely to announce that the Adams-Bagnall Electric Co. of Cleveland, Ohio, has opened a district office in Atlanta, Ga., A. J. Mitchell, special agent, in charge, 323-24 Empire Building. Adams-Bagnall are lamps are well and favorably known, there being over 100,000 now in operation. They have proven most durable for outside lighting where exposed to the action of the elements, while their artistic appearance and pleasing proportions make them admirably adapted for the interior lighting of stores, halls and public buildings. These lamps are made for all circuits in both alternating and direct current, with perfect interchangeability of parts in lamps of the same type. Buyers of lamps will find it to their advantage to investigate the Adams-Bagnall products and obtain estimates from the Atlanta agent before closing their contracts.

Activity in Fiber-Working.

Despite the pessimistic attitude of some few, actual business in many quarters is unusually large. While the iron trade is acknowledged to be the most prominent barometer of commercial activity, the cordage trade might well be deemed important, for if the corn crop is poor fodder yarn will be in small demand. If the grain production is short there is small business for binder twine. One might also mention wool twine, hide rope and other of the smaller specialties, to say nothing of the staples, manila and sisal rope. Instead of there being no demand for cordage, the American Manufacturing Co., which is claimed to be the largest fiber-worker in the world, reports that its mills are working to fullest capacity. Coming from so large a manufacturer, this statement is an important one. In one of the company's specialties, transmission rope, the orders are so many in number and large in quantity that present facilities are entirely inadequate to supply the demand. This has resulted in orders for the special machinery upon which this rope is made to double the output. Large quantities of this rope are being shipped constantly to the cotton mills of the South, flour and grain elevators of the West and lumber mills, cement plants and paper mills wherever they are located. Nor is all this demand for renewals of old ropes worn out, for a majority of this rope is to go into new plants, which would clearly

show that capital has not ceased to invest nor has it lost confidence in the general business outlook. The American Manufacturing Co.'s main offices are at 65 Wall street, New York.

A Big Industrial Plant.

Pennsylvania is a veritable beehive of manufacturing plants. Within its borders have been developed some of the largest manufacturing plants, more especially in iron and steel, that are known to the industrial world. Lebanon has a number of these industries. One of the best known there is that of M. H. Treadwell & Co., Inc., which company succeeded some years ago the Lebanon Manufacturing Co. (established in 1867). The Treadwell plant covers seven acres of land, comprising foundry, machine, forge, erection, pattern, woodworking, crane and paint shops, and spacious offices. It has produced some of the largest work ever made. Instances of this are seen in mentioning forty-eight engine housings turned out in twenty-four hours, 500 tons of open-hearth furnace work for the Union Steel Co., six furnace bosh jackets weighing from 50 to 100 tons each, gas-producing machinery for Southern railroads, twenty-seven slag cars for Mexican smelting plants, thirty ingot cars for Pittsburgh steel plants, about 500 other railroad cars of various kinds, etc. Treadwell & Co. have about doubled their plant during the past twenty months, and still find the demand calling for further improvements. To meet the increase in business additions are constantly being made, and the machine shop is about to be thoroughly remodeled. From the completeness of the Treadwell establishment it is evident that those who happen to be in the market for anything in the line of engineering, founding and machining, special machinery of any description, etc., even of the most intricate and largest size, should obtain Treadwell estimates before placing contracts. The general selling offices are at 95 Liberty street, New York; branch offices in Pittsburgh and Philadelphia.

Canadian Westinghouse Co.

The Canadian Westinghouse Co., Limited, has been organized, with a capital of \$2,500,000. George Westinghouse, founder and head of the great industries which bear his name; H. H. Westinghouse, vice-president of the Westinghouse Air Brake Co.; John Caldwell, treasurer of same company; Frank H. Taylor, vice-president of Westinghouse Electric & Manufacturing Co., and George C. Smith, president of Security Investment Co., all of Pittsburgh, attended the organization meeting in Hamilton, Ont., October 9. They were met by Paul J. Myler of Hamilton, manager and secretary of the Westinghouse Manufacturing Co., Limited, which the new organization succeeds. The new company is a consolidation of Westinghouse interests in Canada. It takes over all property and interests, including the sales organization and business of Ahearn & Soper of Ottawa. The directors are Messrs. George Westinghouse of Pittsburgh, C. F. Size of Montreal, H. H. Westinghouse, George C. Smith, Frank H. Taylor, L. A. Osborne, all of Pittsburgh; Thomas Ahearn of Ottawa, Hon. J. M. Gibson of Hamilton, W. Y. Soper of Ottawa, Paul J. Myler of Hamilton. Executive committee is Messrs. H. H. Westinghouse, F. H. Taylor, L. A. Osborne, George C. Smith and W. Y. Soper. George Westinghouse is president; H. H. Westinghouse, vice-president; F. H. Taylor, vice-president; Paul J. Myler, general manager and treasurer; John H. Kerr, secretary. An extensive plant will be built at Hamilton, and it is expected that at least a thousand employees will be serving the company within a year. The Westinghouse Manufacturing Co. alone has had sales in the Dominion amounting to about \$2,000,000 annually, and with George Westinghouse as the directing power all Westinghouse companies have grown to large proportions, and without doubt so will the Canadian Company.

TRADE LITERATURE.

It Reigns Supreme.

An advertising card issued by the Standard Paint Co., 100 William street, New York, shows Ruberold Roofing reigning supreme. This roofing is built upon scientific principles, containing a weatherproof, acidproof and fire-resisting saturation which has for the past twelve years demonstrated its qualities. Ruberold is used all over the world, and those who happen not to know its merits and think of applying roofing to any surface are invited to send for particulars.

Small Motors.

Bulletin No. 38 of the Crocker-Wheeler Company describes small motors. These motors are designed to comply with the conditions to be met with in the wide variety of

uses to which small motors can be applied. The design is such that either direct, belt or gear driving can be used with equal effectiveness, and either ceiling or wall suspension is permitted. The machines are from one-quarter to three horse-power. For copies of the bulletin address company's main offices at Ampere, N. J.

Kennedy Valves, Hydrants, etc.

A complete catalogue has been issued by the Kennedy Valve Manufacturing Co., manufacturer of valves, hydrants, etc., 57 Beekman street, New York city, with works at Coxsackie, N. Y. This catalogue measures 9x5 inches, and is in the most convenient form for carrying around and displaying the various lines. It contains 128 pages, is printed on heavy coated paper and divided into sections. Section A describes and illustrates sectional views of the different types and details of gate valves. Section B describes and illustrates bronze gate valves. Section C illustrates special hose valves and Slamese connections. Section D is devoted to iron body bronze mounted and all iron gate valves and indicator devices for automatic sprinkler systems. Section E is devoted to globe, angle, radiator and corner valves. Section F is devoted to hydrants, extension valve boxes and floor stands. This catalogue will be sent upon request from interested parties.

Roofing at St. Louis Exposition.

The American people are much interested in the progress made on the construction of the buildings for the Louisiana Purchase Exposition at St. Louis. The extent of the undertaking and the great dimensions of the buildings has excited much comment. In connection with the construction work important announcements have been made regarding some of the American building materials used. A brief reference to some of the roofing features is permissible. There are many acres of roofing, and a number of the principal fair buildings, aggregating a total surface of 3,500,000 square feet, are roofed with Barrett's Tarred Felt and Roofing Pitch. The Barrett materials were selected by the exposition authorities upon their known qualities for reliability. "Barrett's Review" for October gives brief details regarding the roofings referred to, also some other facts and illustrations that will interest dealers in and users of roofing. The Barrett Manufacturing Co. of Philadelphia, St. Louis and other cities can furnish a copy of the publication.

Ingersoll-Sergeant Air Compressors.

The Ingersoll-Sergeant Drill Co. has had an experience of over twenty-eight years in the manufacture of air compressors. During that time the company has used and tested the different types for the compression of air, and the several types finally selected and now manufactured embody the essential points that make machinery of this kind efficient, economical and durable. As an instance of perfection in Ingersoll-Sergeant machines may be mentioned a test of a compound condensing piston inlet compressor of 300 horse-power, in which the engine friction as ascertained by Professor Jacobus of the World's Fair Judges was less than 5 per cent. The company's machines are noted for their simplicity and absence of complication. The Ingersoll-Sergeant compressor catalogue, now in preparation, is represented for the present by a temporary reprint of the old catalogue, to be known as 33B-1903, and requests for a copy are invited from users of and dealers in air-compressing equipments for all kinds of industrial purposes. The book contains some new illustrations, and the tables showing standard sizes have been brought up to date. Address the main offices at 26 Cortlandt street, New York.

Modern Punches and Shears.

Varied are the industries into which have entered and perform important work the modern punching and shearing machinery, rolls and kindred mechanical devices. From year to year progress has been made in the design and construction of such machines, until today they are offered to workers in metal and many other manufacturers in types that are as near perfection as human endeavor can make them. One of the foremost manufacturers in this branch of mechanics is the Cincinnati Punch & Shear Co. of Cincinnati, Ohio. This company designs and builds bending and straightening rolls, punching machines, coping machines, rolling and tin-mill machinery, multiple punches, gate and universal shears, sheet doublers—belt, engine or motor driven. For years the Cincinnati machines have been affording satisfaction in the most exacting service, and the line now embraces sizes and types for nearly every requirement. When necessary special machines are readily built. Catalogue No. 9 presents illustrations and descrip-

tions of many of the standard machines the company offers. The publication gives to prospective buyers an accurate idea of the features that have developed such an extensive demand for Cincinnati punching machines, etc. Send for a copy.

Lidgerwood Rapid Unloader.

The number of Lidgerwood Rapid Unloaders now in service by the leading railroads and railroad contractors is emphatic testimony that the equipment occupies a most prominent place among modern labor-saving devices for reducing the cost of railroad construction. This unloader, with a train of ordinary flat cars, a cable and a plow, is stated to be now handling dirt from pit to track at a cost lower per cubic yard than any specially-contrived dumping car. As a reminder of the efficiencies of the unloader its manufacturer, the Lidgerwood Manufacturing Co., is distributing a pamphlet illustrated by photographic process. The pictures hardly need explanation, and because the booklet has been designed for busy men, the text is as brief as possible. A study of the facts given cannot fail to convince any progressive railroad man that the Lidgerwood unloader will earn dividends. The pamphlet's handsome cover page comprehensively indicates the general method of the unloader. It shows a number of flat cars filled with material, and at one end of the train is seen a man of Herculean proportions pulling a cable to which is a plow that expeditiously pushes the materials off the cars. This gives an idea of the design of the unloader. General offices of the Lidgerwood Manufacturing Co., 96 Liberty street, New York.

Abendroth & Root Products.

The success of the Abendroth & Root Manufacturing Co. during its long existence has been one of the notable features of the progress of American engineering and manufacturing enterprise. For thirty-four years Root Water-Tube Boilers have been made and erected for operation under almost every conceivable condition, for the use of every known fuel, and in nearly all the civilized countries of the world. The design and construction of these boilers is such that the company claims it can demonstrate. If afforded the opportunity, great superiority over other types. Not only the boilers, but also the Root Spiral-Riveted Piping, A. & R. Improved Exhaust Heads and other allied manufactures have earned a permanent place in the industrial field. In issuing a new catalogue the company has departed somewhat from the beaten paths of tiresome reading matter, and offers a few illustrations of the Root boiler and short descriptions of same, together with a few interesting views and a number of valuable tables. Men who have occasion to install boilers or to use any other products of the kind referred to above will find they have not made the fullest investigation unless the merits and actual performances of the Abendroth & Root specialties are inquired into. With a knowledge of conditions and requirements estimates are furnished, also blueprints and such other relative data as may be desired to form a final and conclusive decision before giving orders. The company's main offices are at 99 John street, New York.

Automatic Screw Machine.

Managers of plants wherein machine tools are used are, as a rule, desirous of being informed as to the latest improvements in the mechanical equipment they need to buy. In this connection it is pertinent to call attention to the "Acme" automatic screw machine built by the National-Acme Manufacturing Co. of Cleveland, Ohio. This machine is a radical departure from the old standard form. Instead of a turret revolving to bring the several tools successively to a single bar, four bars or rods are acted upon simultaneously by all the screws. The rapidity and accuracy with which the Acme machine will turn out its product has been fully demonstrated, and is continually being shown to visitors at the plant where they are made. A descriptive pamphlet entitled "The Spirit of Progress" has been issued illustrating and describing the Acme multiple-spindle full automatic screw machine and semi-automatic screw slotting machine. Its contents explain fully the various features, and it is stated that "performing simultaneously every operation, the possibility of being superseded in any marked degree and rendered practically obsolete as a machine tool before its working life is over, is entirely eliminated from the Acme." Brief reference to the "Spirit of Progress" as a handsome product of the printer's art is allowable. The book's illustrations are photographic and so clear that one can almost imagine the machine is before his eyes. The cover page shows the spirit of progress represented as a nude figure flying with the "Acme" to introduce it for the benefit of mankind.

FINANCIAL NEWS.

The Manufacturers' Record invites information about Southern financial matters, items of news about new institutions, dividends declared, securities to be issued, openings for new banks, and general discussions of financial subjects bearing upon Southern matters.

Review of the Baltimore Market.

Office Manufacturers' Record,
Baltimore, Md., October 28.

The Baltimore stock market has been quiet during the past week. The little business that appeared was principally in United Railways issues and in investment securities. Consolidated Gas, Seaboard, Cotton Duck and G. B. S. Brewing stocks and bonds were all dull.

In the trading United Railways common went from 91½ to 81½; the income bonds sold between 58¼ and 58½; the 4 per cent. bonds at 90½ and 91, and Light & Power 4½s at 83. Consolidated Gas shares were dealt in at 60 and 61; the 6 per cent. bonds at 109½ and 109¾; the 5 per cent. at 109½, and the 4½s at 101 and 101½. Seaboard common sold at 12½; the preferred at 20½; the 4 per cent. at 67½ to 67¾, and the 5s at 100 and 100¼. Cotton Duck common at 1 and 1¼; G. B. S. Brewing incomes at 20 to 20½, and the 1sts at 46 and 46½.

Citizens' Bank shares sold at 28; Merchants' at 188, and Third National at 120; Maryland Casualty at 46.

Other securities traded in were as follows: Northern Central stock, 84½ and 85; Atlantic Coast Line Railroad stock, 105; Atlantic Coast Line 1st consolidated 4s, 90½ to 91¼; Atlantic Coast Line (S. C.) 4s, 97¼; Atlantic Coast Line 4s, certificates, 88; Georgia & Alabama 5s, 103 and 103½; Georgia, Carolina & Northern 5s, 106½; Georgia Southern & Florida 5s, 110; City & Suburban (Baltimore) 5s, 113; North Baltimore 5s, 119; Consolidation Coal, 70; Philadelphia Company 5s, 105½; Baltimore City 4s, 1926, C. & P., 116½; do. 3½s, 1928, 111; do. do., 1930, 111; Carolina Central 4s, 88¼ and 88½; Virginia Midland 2ds, 108; Baltimore Fire Insurance, 22; Philadelphia Company, 36½; Potomac Valley 5s, 111; Southern Railway 5s, 113; Knoxville Traction 5s, 101; Baltimore Traction, convertible 5s, 103½; Anacostia & Potomac 5s, 89½ and 89¾; Charleston & Western Carolina 5s, 100; Louisville City 4s, 1923, 105¼; City & Suburban 5s, Washington, 92.

SECURITIES AT BALTIMORE.

Last Quotations for the Week Ended
October 28, 1903.

Railroad Stocks.	Par.	Bid.	Asked.
Georgia Sou. & Fla. 2d Pref.	100	62	70
United Railways & Elec. Co.	50	8½	8¾
Seaboard Railway Common	100	12½	14
Seaboard Railway Preferred	100	20¼	21¾
Atlantic Coast Line Railroad	100	102½	107
Atlantic Coast Line of Conn.	100	220	250

Bank Stocks.	Par.	Bid.	Asked.
Citizens' National Bank	100	28	28
Commercial & F. Nat. Bank	100	120	120
Farmers & Mer. Nat. Bank	40	65	65
First National Bank	100	142	145
German Bank	100	110	110
Manufacturers' National Bk.	100	102	102
Merchants' National Bank	100	189	189
National Bank of Baltimore	100	111	112½
National Bank of Commerce	15	26	26
National Exchange Bank	100	189½	196
National Howard Bank	10	11½	11½
National Marine Bank	100	28	28
National Mechanics' Bank	10	28	31
National Union Bank of Md.	100	118	118
Second National Bank	100	190	190
Third National Bank	100	120	120

Trust, Fidelity and Casualty Stocks.	Par.	Bid.	Asked.
Fidelity & Deposit	50	150	150
International Trust	100	115	115
Maryland Casualty	25	50	50
Mercantile Trust & Deposit	50	130	150

Miscellaneous Stocks.	Par.	Bid.	Asked.
G. B. & S. Brewing Co.	100	5	12
United Elec. L. & P. Pref.	50	40	40
Consolidation Coal	100	70	70
George's Creek Coal	100	87	87
Consolidated Gas	100	62	62½

Railroad Bonds.	Par.	Bid.	Asked.
Atlanta & Charlotte 1st 7s, 1907	108	94	95¼
Albany & Northern 1st 5s	94	90¾	91¼
Atlantic Coast Line 1st 4s	100	115½	116½
Columbia & Greenville 1st 6s, 1916	115½	116½	116½
Georgia, Car. & North. 1st 5s, 1929	106½	106½	106½
Georgia South. & Fla. 1st 5s, 1945	110½	110½	110½

Petersburg, Class B 6s, 1926	120	130
Richmond & Danville Gold 6s, 1915	112	112
Seaboard & Roanoke 6s, 1936	110	110
Southern Railway Con. 5s, 1994	112	112
Virginia Midland 1st 6s, 1906	103	103
Virginia Midland 2d 6s, 1911	107	107
Virginia Midland 3d 6s, 1916	111½	111½
Virginia Midland 4th 3-4s, 1921	104	104
Virginia Midland 5th 5s, 1926	107	107
West. North Carolina Con. 5s, 1914	115	115
West Virginia Central 1st 6s, 1911	110	111
Wilmington & Weld. Gold 5s, 1935	115	115
Charleston City Railway 5s, 1923	103½	107½
Charleston Con. Electric 5s, 1939	89	89
Knoxville Traction 1st 5s, 1923	100	100
Newport News & Old Pt. 5s, 1938	105	105
Norfolk Street Railway 5s, 1944	105	107½
United Railways 1st 4s, 1948	90½	90½
United Railways Inc. 4s, 1949	53	55½
Seaboard 4s	67¼	67¼
Seaboard 10-year 5s	100	100½

Miscellaneous Bonds.	Par.	Bid.	Asked.
G. B. & S. Brewing 1st 3-4s	45¾	47	47
G. B. & S. Brewing 2d 3-4s	29½	29½	29½
United Elec. Light & Power 4½s	82	84	84
Atlanta Gaslight 1st 5s, 1947	100	100	100
Consolidated Gas 6s, 1910	109¾	109¾	109¾
Consolidated Gas 5s, 1939	109¾	109¾	109¾
Consolidated Gas 4½s	101½	102	102

SOUTHERN COTTON MILL STOCKS

Quotations Furnished by Hugh MacRae & Co., Wilmington, N. C., for
Week Ending October 27.

	Bid.	Asked.
Abbeville Cotton Mills (S. C.)	70	70
Alpen Mfg. Co. (S. C.)	90	90
Anderson Cotton Mills (S. C.)	123	127
Arkwright Mills (S. C.)	105	105
Augusta Factory (Ga.)	64	64
Avondale Mills (Ala.)	90	95
Belton Mills (S. C.)	103	103
Bibb Mfg. Co. (Ga.)	108½	108½
Brandon Mills (S. C.)	101	101
Buffalo Cotton Mills (S. C.)	101	104½
Buffalo Cot. Mills (S. C.) 1st Pfd.	98	98
Cabarrus Cotton Mills (N. C.)	122	122
Chickamauga Mfg. Co. (S. C.)	95	95
Clifton Mfg. Co. (S. C.)	103	103
Clinton Cotton Mills (S. C.)	135	135
Courtenay Mfg. Co. (S. C.)	125	130
Columbus Mfg. Co. (Ga.)	95	95
Dallas Mfg. Co. (Ala.)	90	90
Darlington Mfg. Co. (S. C.)	91	91
Engle & Phoenix Mills (Ga.)	100	100
Enterprise Mfg. Co. (S. C.)	80	80
Exposition Cotton Mills (Ga.)	150	150
Gaffney Mfg. Co. (S. C.)	97	97
Granby Cot. Mills (S. C.) 1st Pfd.	98½	98½
Granville Mfg. Co. (S. C.)	102	102
Greenwood Cotton Mills (S. C.)	105	105
Greenville Mills (S. C.)	185	200
Henrietta Mills (N. C.)	85	85
King, John P. Mfg. Co. (S. C.)	110	110
Lancaster Cotton Mills (S. C.)	100	100
Lancaster Cot. Mills (S. C.) Pfd.	100	100
Langley Mfg. Co. (S. C.)	85	90
Laurens Cotton Mills (S. C.)	165	165
Lockhart Mills (S. C.)	100	100
Louise Mills (N. C.)	95	95
Louise Mills (N. C.) Pfd.	102	102
Marbleboro Cotton Mills (S. C.)	100	100
Manchester Cotton Mills (S. C.)	90	90
Mills Mfg. Co. (S. C.)	100	100
Mills Mfg. Co. (S. C.) Pfd.	100	100
Monaghan Mills (S. C.)	100	103
Newberry Cotton Mills (S. C.)	120	120
Norris Cotton Mills (S. C.)	108½	108½
Odell Mfg. Co. (N. C.)	98	102
Orangeburg Mfg. Co. (S. C.) Pfd.	103	103
Orr Cotton Mills (S. C.)	100	102
Pacolet Mfg. Co. (S. C.)	110	110
Peizer Mfg. Co. (S. C.)	165	175
Richland Cotton Mills (S. C.) Pfd.	98½	98½
Roanoke Mills (N. C.)	90	90
Saxon Mills (S. C.)	100	100
Sibley Mfg. Co. (Ga.)	60	66
Southern Cotton Mills (N. C.)	95	95
Spartan Mills (S. C.)	135	140
Trion Mfg. Co. (Ga.)	125	150
Tucapau Mills (S. C.)	140	140
Union Cotton Mills (S. C.) Pfd.	103½	103½
Victor Mfg. Co. (S. C.)	129	133
Warren Mfg. Co. (S. C.)	100	102
Warren Mfg. Co. (S. C.) Pfd.	106	106
Washington Mills (Va.)	15	20
Whitney Mfg. Co. (S. C.)	115	125
Wilmington Cot. Mills (N. C.) Pfd.	100	100
Woodruff Cotton Mills (S. C.)	95	97½

Buffalo & Susquehanna Report.

The annual report of the Buffalo & Susquehanna Railroad for the year ended June 30, 1903, gives a full account of the plans of the company for extensions northward from Wellsville, N. Y., to Buffalo, and southward from Sinnemahoning, Pa., to the bituminous coal fields of Clearfield and Jefferson counties.

The surveys for the Buffalo line, about eighty-five miles, have developed unexpectedly favorable grades and alignment, and construction will soon begin. At Buffalo extensive terminals are being created on Lake Erie adjoining the plant of the Buffalo & Susquehanna Iron Co. and the Lackawanna Steel Co. The contractors have made considerable progress in excavating a ship canal along the northern boundary of the terminal property, and have also started the construction of docks and slips.

The new line in Pennsylvania, connecting the present line with Sykesville, midway between Du Bois and Punxsutawney, will be about fifty-five miles long. Construction was started last spring, and it is expected that the road will be com-

pleted into Tyler and Du Bois before January 1, 1904. Engineering parties are making surveys for the proposed cut-off from Hull to Cutler Summit, twenty-two miles.

Through the Buffalo & Susquehanna Coal & Coke Co. the railroad company has become financially interested in coal properties. During the past year the coal and coke company has bought two tracts of coal land, one at Troutville, Pa., and the other at Big Run, the former containing 6,000,000 tons of bituminous coal of excellent quality and the latter 15,000,000 tons. Probably other purchases will be made within the near future of lands estimated to contain 30,000,000 tons. These purchases will carry with them the control of still other lands estimated to contain 20,000,000 tons. At the close of the fiscal year the coal and coke company owned lands conservatively estimated to contain not less than 55,000,000 tons of bituminous coal. This does not include 16,000,000 tons in a tract sold to the affiliated Buffalo & Susquehanna Iron Co. All properties have been paid for in cash.

The mines at Tyler and Du Bois are being operated to their full capacity, and will produce about 550,000 tons of coal during the current fiscal year. Part of the output of the Tyler plant is being made into coke. A second large plant is being constructed near Du Bois, which should produce at least 300,000 tons annually. At Big Run the construction of another plant to produce 400,000 tons has begun. Preliminary surveys are being made at both Medix Run and Troutville, and a mine of 250,000 tons capacity will be opened soon at one of those places. It is expected that by the time the railway is built into Buffalo the annual output of the coal and coke company will have reached 1,250,000 tons. Before that time the Buffalo & Susquehanna Iron Co. will have completed the plant at Sykesville, which will produce coal and coke tonnage of about 300,000 tons per annum. These two amounts make an assured annual tonnage for the system of about 1,550,000 tons of coal and coke, to which should be added not less than 200,000 tons per annum of coal and coke shipped by other producers.

For the fiscal year 1903 the report shows gross earnings of \$1,000,752, as against \$835,748 in 1902, the increase of \$165,004 being 19.74 per cent. Total net income amounted to \$532,794, fixed charges to \$147,904, and the surplus to \$384,890, out of which \$70,983 was paid in 4 per cent. dividends on the preferred stock and \$175,900 in 5 per cent. dividends on the common stock. Gross earnings averaged \$5801 and net \$2507 per mile for the 173 miles of road operated. The ratio of operating expenses and taxes to gross earnings in 1903 was 56.79 per cent.; in 1902, 57.25 per cent. The ratio of interest on funded debt to total income available for interest in 1903 was 27.76 per cent. Attention is called to the excess of working assets over working liabilities, amounting to \$191,325.

A Useful Volume.

"Trust Companies of the United States" is the title of a book which is published by the United States Mortgage & Trust Co., 55 Cedar street, New York, and dated October, 1903. It was compiled by the Audit Company of New York, and contains classified statements of the assets and liabilities of nearly all the trust companies in this country, it being stated in the preface that every company has been requested to furnish a statement of its affairs, and these are of a uniform date, most of the facts being as of June 30, 1903. Only in an occasional instance has a company been omitted owing to

TABLE OF CONTENTS.

EDITORIAL:	Page.
Italians for the South	20
The Natural Flow of Commerce	20
For Industrial Memphis	20
The Mississippi Valley	20
Southern Textile Workers	20
A Fly in the Ointment	20
Evasions of Child-Labor Laws	20
The Southern Farm Magazine	20
Safeguards in Electricity	20
To Advertise Arkansas	20
Trolleys in City Growth	20
Baltimore at St. Louis	20
Savannah and Bremen	20
Texas Wealth Advancing	20
For an Arkansas Mill	20
Methods of Development Applicable to the South	20
Trade with Dutch India	20
Mechanical Drying of Minerals	20
Tennessee River Improvement	20
To Make Portland Cement (Illus.)	20
Nearing Export Trade	20
The Texas Oil Field	20
Railroads and Levees	20
At Mammoth Springs	20
The Argentine Republic	20
The Mississippi Levees	20
The Mineral Industry	20
Rice Kitchen at St. Louis	20
Machinery for Spain	20
Etching Plates for Saws	20
RAILROADS:	
B. L. Winchell's Rise	20
Cotton Belt's New Route	20
The New Washington Station	20
Pensacola, Alabama & Western	20
Coal & Coke Railway	20
Raleigh & Pamlico	20
Elevated and Subway	20
Birmingham & Lineville Railroad	20
Colonel Lott's New Line	20
B. & O. System Equipment	20
Electric Line in Oklahoma	20
J. H. Hyde Now a Director	20
Craddock to Burnsville	20
Railroad Notes	20
TEXTILES:	
A \$500,000 Fine-Goods Mill	20
The Cotton Movement	20
Textile Notes	20
Quotations of Cotton Yarns	20
MECHANICAL:	
Instantaneous Ice and Refrigerating Machine (Illus.)	20
Concrete Building Blocks (Illus.)	20
Modern Knitting Machinery	20
Broderick & Bascom Rope Plant (Ill.)	20
Direct-Acting Steam Feed (Illus.)	20
A New Punch (Illus.)	20
A Flourishing Town	20
CONSTRUCTION DEPARTMENT:	
New Enterprises	20
Building Notes	20
Railroad Construction	20
Machinery Wanted	20
Industrial News of Interest	20
Trade Literature	20
FINANCIAL NEWS:	
Review of the Baltimore Market	20
Securities at Baltimore	20
Southern Cotton-Mill Stocks	20
Buffalo & Susquehanna Report	20
A Useful Volume	20
On the Currency	20
New Corporations	20
New Securities	20
Financial Notes	20

lack of authoritative information. About 200 companies organized during 1903, and whose figures are not yet obtainable, are not, of course, included. In the presentation of these statements the companies are classified first by States and then by towns and cities. Most of the statements are made in detail, and lists of officers and directors are appended. The volume, which is of more than 200 pages, is of a very convenient size, and is well printed on heavy paper. It will doubtless prove to be a valuable reference book to financiers as well as to other business men.

Dallas, Texas, will, it is reported, redeem \$100,000 of bonds issued ten years ago.

The United States Trust Co. of St. Louis has decided to increase its capital from \$400,000 to \$1,000,000 and to increase the surplus from \$200,000 to \$500,000.

[For Additional Financial News, See
Pages 30 and 31.]

Hambleton & Co.**BANKERS and BROKERS,**

Members New York and Baltimore Stock Exchanges.

17 S. Calvert St., BALTIMORE.

High-grade Investment Bonds, Municipal, Railway, Industrial.

Letters of Credit Available Everywhere.

CONDENSED STATEMENT OF THE First National Bank of Richmond, Va.

Sept. 9, 1903.

RESOURCES.

Loans and Discounts	\$4,977,400 94
Overdrafts	142 54
Other Stocks and Bonds	17,691 78
Banking House and other Real Estate	67,510 14
Furniture and Fixtures	0 00
U. S. 2 Per Cent. Bonds at par (Market Value \$987,635.00.)	612,500 00
Premium on U. S. Bonds	0 00
Virginia Bonds to Secure U. S. Deposits	396,000 00
Cash and Due from Banks	1,408,812 35
LIABILITIES.	\$6,580,457 75

Capital	\$600,000 00
Surplus and Profits, net	\$15,742 23
Reserved for Interest	9,696 01
Circulation	\$99,900 00
Deposits	4,447,210 51
U. S. Bond Account	12,500 00
Virginia Bond Account	396,000 00
	\$6,580,457 75

VIRGINIUS NEWTON, Pres. JNO. M. MILLER, Jr., Cash.

C. N. McADOO & CO.

GREENSBORO, N. C.

Investment Securities.

Stocks and Bonds bought and sold.

Legitimate enterprises incorporated and financed.

Loans negotiated

HENRY W. THOMSON,

Spartanburg, S. C.

STOCK AND BOND BROKER,

Southern Cotton-Mill Stocks a Specialty.

CORRESPONDENCE SOLICITED.

Members Baltimore Stock Exchange.

J. WM. MIDDENDORF & CO.**BANKERS AND BROKERS,**

Continental Trust Bldg.

Baltimore, Md.

Stocks and Bonds Bought and Sold on Commission. Special attention given to Municipal and other Investment Loans. Dealers in Foreign Exchange. Drafts on Europe and Letters of Credit furnished. Private Wire to New York and Richmond.

Merchants' & Farmers' Nat. Bank

CHARLOTTE, N. C.

Capital, \$200,000. Surplus and Profits, \$75,000.

Prompt and intelligent attention to all business entrusted to us. Correspondence invited.

Dr. J. H. McAden, Pres. Geo. E. Wilson, V. Pres

C. N. Evans, Cash. W. C. Wilkinson, Asst. Cash.

N. Y. Correspondent: SEABOARD NATIONAL BANK.

Spencer Trask & Co.**BANKERS**

William & Pine Sts., New York

Investment Securities.

Members New York Stock Exchange.

Branch Office, Albany, N. Y.

Savannah Trust Company,

13 Bay St., East, SAVANNAH, GA.

Capital, \$500,000.

Executes trusts of every description.

Accepts deposits and allows interest on daily balances.

Collections promptly handled.

WM. W. MACKALL, President.

GEO. J. BALDWIN, Vice-President.

WM. V. DAVIS, Secretary and Treasurer.

JOHN L. WILLIAMS & SONS,**BANKERS,**

Dealers in RICHMOND, VA.

Southern Investment Securities

MUNICIPAL BONDS A SPECIALTY.

Correspondence Invited.

INCORPORATE

Under a United States Law,

thus insuring respect and dignity throughout the world. No incorporation fee; no annual tax. Information furnished by

The District of Columbia Charter Co.

Columbian Bldg., Washington, D. C.

References by permission:

Central Natl. Bank, Natl. Capital Bank and James L. Norris, Patent Solicitor, Washington, D. C.

HUGH C. RISDON,

Industries Located, Organized and Financed. Bond Issues Placed.

Industrial Plants developed, bought and sold.

Main Office, 431 BOND BLDG., WASHINGTON, D. C.

Seekers after and for Industrial Sites, Plants, Factories and Mills can be advantageously assisted by us. We organize, finance and develop Industrial Propositions. Charters obtained and stock and bond issues placed. Practical managers and superintendents of financial responsibility procured for manufacturing industries.

Correspondence solicited. Explanatory Book let on application.

Address nearest address noted herewith.

HUGH C. RISDON, Industrial Broker.

P. O. Box 110, Washington, D. C.

P. O. Box 601, Norfolk, Va. P. O. Box 142, Atlanta, Ga.

Durham & Northern 6s,**Raleigh & Augusta 6s,****South & Western 3-5s,**

And all Railroad Securities dealt in, but no new enterprises promoted.

F. J. LISMAN & CO., 30 Broad St., New York.

Specialists in Steam Railroad Securities.

MEMBERS NEW YORK STOCK EXCHANGE.

J. P. HORNADAY & CO.

Electric Railway, Water Works, Light, Traction, Industrial and Mineral Properties and Securities Bought and Sold.

Suite No. 1108 Traction Bldg. CINCINNATI

Hugh MacRae & Co.**Bankers,**

MISCELLANEOUS SOUTHERN SECURITIES,

COTTON MILL STOCKS

WILMINGTON, N. C.

WASHINGTON, D. C., (Kellogg Building.)

International Trust Co.

Of Maryland,

BALTIMORE.Capital, \$2,000,000.00
Surplus and Profits, \$1,550,660.12**OFFICERS:**DOUGLAS H. GORDON, President.
J. WM. MIDDENDORF, Vice-Pres.
EDWARD H. THOMSON, Sec. and Treas.
CHAS. D. FENHAGEN, Asst. Sec. & Treas.
WALTER D. FOCKE, Asst. Sec. & Treas.**Executive Committee:**SAMUEL C. ROWLAND, Chairman, Sec. and Treas. American Lumber Co.; Pres. National Bank of Port Deposit, Md.
SUMMERFIELD BALDWIN, of Woodward, Baldwin & Co., Wholesale Dry Goods Commission Merchants; Director National Exchange Bank
RICHARD H. EDMONDS, President and Editor Manufacturers' Record.
J. WM. MIDDENDORF, of J. Wm. Middendorf & Co., Bankers & Brokers; Vice-Pres. Seaboard Air Line Railway.
EDWARD H. THOMSON, of E. H. Thomson & Sons, Bankers & Brokers; Director Merchants National Bank.
DOUGLAS H. GORDON, President.

We respectfully solicit correspondence with Banking Institutions and Corporations desiring the services of a well equipped Trust Company.

4 % Certificates of Deposit.

Due March 1, 1908.

Interest payable quarterly.

Coupon Certificates of \$1000 each.

The above certificates are engraved, in coupon form, issued to bearer, with provision for registration of Principal, in denominations of \$1000 each, interest at four per cent. per annum, payable March, June, September and December.

The holder of these certificates, by giving sixty days' notice in writing, can obtain payment of principal on any interest date.

ISSUED BY

The Continental Trust Co.**BALTIMORE.**

Capital and Surplus, \$5,340,000.

Interest paid on deposits subject to check.

Largest Capital of Any Bank or Trust Company in the South Atlantic States.

RICHMOND TRUST

AND

SAFE DEPOSIT COMPANY.

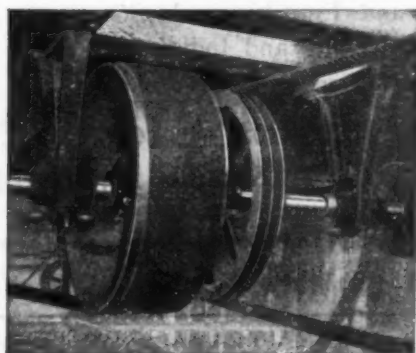
N. W. Corner 10th and Main Streets, RICHMOND, VA.

CAPITAL, \$1,000,000

Does a general Trust Company business. Acts in all Fiduciary capacities. Receives deposits and allows interest thereon.

President, JOHN SKELTON WILLIAMS,
Vice-Presidents, JAMES H. DOOLEY,
HENRY L. CABELL,
Treasurer, LEWIS D. CRENSHAW, Jr.

CORRESPONDENCE INVITED.

*Americans*Do you wish any Manila, Sisal or Jute Rope?
Write THE AMERICAN MFG. CO., 63 Wall Street, N. Y.
They are the largest fibre workers in the world, making everything in the Cordage line from a small India Twine to an eighteen-inch towing Hawser.

This rope drive is transmitting 80 H. P.; the belt 75 H. P.

"AMERICAN" TRANSMISSION ROPE

is not the cheapest to buy but it is the most economical to use.

Power costs money.

"A Little Blue Book on Rope Transmission" will show you how to save both. A copy will be sent for the asking, and it is worth asking for.

Ropes

ON THE CURRENCY.

Action of the American Bankers' Association in Convention.

At the annual convention of the American Bankers' Association held at San Francisco resolutions on the currency question were adopted declaring that the only proper remedial measures for the currency lie in the establishment of a single gold legal tender, the cessation of the monthly coinage of one million and a half of silver dollars, the maintenance of a parity with gold of the legal-tender silver dollars outstanding, and the recoinage of silver dollars into subsidiary coin accordingly to meet public requirements. It was also resolved when the report of the currency committee was adopted that the president of the association shall appoint a committee of three for the purpose of urging legislation along lines recommended in the report.

The currency committee reported that there is at present more real money in the United States than at any other period in its history. The total is now \$2,708,693,662, including \$1,267,733,949 in gold coin, which embraces the bullion in the Treasury; \$555,853,494 standard silver dollars and \$101,867,228 of subsidiary silver coin. Out of the total stated above there is in circulation \$2,388,902,178. To prevent embarrassments as a result of accumulation of money in the Treasury the committee suggests that the government should deposit moneys collected for customs dues in the banks of the community from which such money has been withdrawn. On the question of circulation the committee advises the removal of the limitation of \$3,000,000 per month upon the withdrawal of circulation so that banks can retire currency when it is no longer needed. Emergency circulation is also favored within careful limitations subject to a tax of 6 per cent. per annum so as to insure and hasten its return to the banks issuing such circulation. It is also recommended that the tax on circulation should be uniform when the currency is based on United States government bonds.

The convention elected officers for the ensuing year as follows: President, Frank G. Bigelow, president of the First National Bank, Milwaukee; vice-president, E. F. Swinney, president of the First National Bank, Kansas City. Among the members of the executive council are J. D. Powers, president of the National Trust Co. of Louisville, Ky., and Mills B. Lane, president of the Citizens' Bank of Savannah, Ga.

Mr. Caldwell Hardy of Norfolk, Va., the retiring president, called the convention to order and made his annual address. Among others who spoke and the subjects they discussed were as follows: Willis Payne, president of the Consolidated National Bank of New York, "Savings Banks That Have Failed;" Fred Heinz, president of the Farmers and Mechanics' Savings Bank of Davenport, Iowa, "The Dangers Threatening the Savings Banks;" P. T. Babcock, trust officer Colonial Trust Co. of New York, "Escrows, a Varied and Profitable Feature of the Trust Company Business;" William Hanhart of New York, "Trust Accounts in Savings Banks;" Charles E. Sprague, president of the Union Dime Savings Bank, New York, "Bank Accounts;" Lucius Teter, cashier Chicago Savings Bank, "Savings Bank Advertising;" William B. Ridgely, comptroller of the currency, "The Business Situation and the Currency;" J. E. McAshan, cashier of the South Texas National Bank of Houston, "Money Supply of the United States;" Ellis H. Roberts, treasurer of the United States, "Effects of the Inflow

of Gold;" J. B. Finley, president of the Fifth National Bank of Pittsburgh, Pa., "Education of Bank Clerks;" L. P. Hillier, cashier American National Bank of Macon, Ga., "Money Orders of Bankers' Associations." Secretary James R. Branch read an address by Lyman J. Gage of Chicago, formerly Secretary of the Treasury, on "The Problem of Wealth and the Trust Company as Trustee."

The association now has 7065 members, as against 1570 in 1895. The total capital, surplus and undivided profits represented are \$10,547,230,405.

New Corporations.

The First National Bank of Dickson, Tenn., has begun business.

The First National Bank of Dry Ridge, Ky., capital \$30,000, has been organized, with W. T. S. Blackburn as cashier.

The Hickory Banking & Trust Co., capital \$35,000, has been chartered at Hickory, N. C. W. C. Kenyon of Newton and others are interested.

The Bond Investment Co., capital \$500,000, has been incorporated at Washington, D. C., by James A. Black, Charles W. Embrey and James R. Porter.

The Cairo Banking Co. of Cairo, Ga., capital \$35,000, has been chartered. The incorporators are Walter Davis, W. S. Harrison, O. T. Davis and S. R. Davis.

The First National Bank of Lineville, Ala., capital \$50,000, is being organized by John S. Jemison of Birmingham and R. L. Ivey and J. M. Leverett of Lineville.

The First National Bank of Blakely, Ga., capital \$50,000, has been organized. The officers are E. Hilton, president; A. G. Powell, vice-president; E. M. Boyd, cashier.

The Citizens' Bank of Waverly, Tenn., capital \$25,000, has been incorporated by C. W. Turner, J. M. McAdoo, J. F. Shannon, J. E. Tubb, J. C. Harris and J. A. Slayden.

The Bank of Leckridge, Logan county, Oklahoma, capital \$10,000, has been authorized to begin business. The incorporators are A. P. Smelze, U. C. Guss and J. S. Mabon of Guthrie.

The Chandler Building and Loan Association of Chandler, Okla., capital \$5000, has been incorporated by H. M. Johnson, H. E. Kanaga, W. C. Hoover, H. H. Johnson and L. H. Rooney.

It is reported that another bank will soon be organized in Atlanta, Ga., by J. H. Carter of Blue Ridge, president of the North Georgia Trust Co., and Charles D. Barker of Atlanta and others.

The Farmers' National Bank of Van Alstyne, Texas, capital \$50,000, has organized, with the following officers: C. C. Walsh, president; E. G. Beall, vice-president; G. W. Hay, cashier.

The Citizens' National Bank is being organized at Tishomingo, I. T., by S. Parmenter and L. C. Parmenter of Oklahoma City and others. The Tishomingo National Bank is also being organized.

The Bank of Marvin of Marvin, N. C., has been chartered, with \$10,000 to \$20,000 capital. The incorporators are G. A. Martin, T. V. Hardison, M. L. Harris, J. O. Hines, R. D. Ross and C. M. Franks.

The Farmers and Merchants' National Bank of Troy, Ala., has been approved; capital \$125,000. The organizers are Fox Henderson, J. C. Henderson, L. M. Bashinsky, J. S. Copeland and Charles Henderson.

The Citizens' Bank of Jett, O. T., capital \$10,000, has been authorized to begin business with the following incorporators: T. P. Cary, C. T. Powell, J. H. Barnes, L. J. Moorman of Jett and W. G. Moorman of Litchfield, Ky.

The Merchants' National Bank of Brownsville, Texas, has been incorpo-

FISK & ROBINSON
BANKERS

Government Bonds
and other
Investment Securities

MEMBERS NEW YORK STOCK EXCHANGE

35 CEDAR STREET 28 STATE STREET
NEW YORK BOSTON

Pope Mfg. Co. Stocks,
Consolidated Tobacco,
Colts Arms Co.,
Omaha Gas Co. 5s,
Amer'n School Furniture,
Gold & Stock Telegraph,
Bankers Trust Co.,
U. S. Steel Corp'n 5s,
Amer'n Malting Co. 6s,
Pressed Steel Car Notes.

DEALT IN.

TOBEY & KIRK,

25 Broad St., New York.

Established 1873.

J. Wm. Middendorf, Pres. A. H. Rutherford, Treas.
R. L. Williams, Vice-Pres.
Howard P. Page, Sec. and Auditor.
E. L. Bemis, General Manager,
Office of Gen. Mgr., Richmond, Va.

Railways & Light Co. of America,

EXECUTIVE OFFICES:
CONTINENTAL TRUST BUILDING,
BALTIMORE, MD.

Finances, Builts, Purchases Electric Railways,
Electric Lighting Properties, Waterworks, Ice
Plants, Etc. Examinations made and reports
furnished on all classes of industrial properties.
CORRESPONDENCE SOLICITED.

APPRAISAL & AUDIT CO. OF AMERICA.

Teutonic Bldg., CHICAGO.

Audits and Examinations of Books and Accounts. Deviser: of Successful
Accounting Systems. Appraisers of all classes of Property. Plans and
Specifications of Buildings and Machinery. Send 10c. in stamps
for book, "SYSTEM OF APPRAISAL & AUDIT."

WE FINANCE AND BUILD

Electric Railways, Power Stations, Water Powers, etc., etc.

WE BUY

Railway Charters and Franchises, ALSO Small Issues of
Railway, Mining and Industrial Bonds.

Correspondence Solicited.

The Mechanics Electric Co.

P. O. Box 1157.

170 Summer St., BOSTON, MASS.

THE AUDIT COMPANY OF NEW YORK

EXAMINATIONS.

APPRAISALS.

AUDITS.

Investigations for Financing and Underwriting
and for Reorganization Committees.

New York,
Chicago,
New York Life Building.

Mutual Life Buildings, 43 Cedar Street.

Philadelphia,
Arcade Building.

WHEN ABOUT TO
INCORPORATE

Write for fourth edition of
"Pointers on Delaware Cor-
poration." Official forms,
estimates of cost and copies
of the amended law.

DELAWARE TRUST COMPANY

WILMINGTON, DELAWARE.

The Exchange Bank,
MACON, GA.

J. W. CARANISS, Pres. C. M. Orr, Cash.
W. H. BURDICK, Asst. Cash.
Capital, \$500,000.00
Surplus and Undivided Profits, 131,028.69
Best facilities for making Collections at lowest
rates. Correspondence invited.

Jacob Phinzy, Pres. Chas. G. Goodrich, Cash.
Hamilton H. Hickman, Vice-Prest.

Georgia Railroad Bank,

AUGUSTA, GA.

Capital, \$200,000.00 Undivided Profits, \$201,585.63
Commenced Business December 31, 1892.

SURETY BONDS.

Fidelity and Deposit Co.

OF MARYLAND.

Home Office, - BALTIMORE, MD.

Assets Over \$5,000,000.

Pioneer Surety Co. of the South.
Becomes Surety on Bonds of every de-
scription.

AGENTS IN ALL PRINCIPAL CITIES.

HARRY NICODEMUS, Sec'y and Treas. EDWIN WARFIELD, President.

Guaranteed Storage Receipts Issued

For property stored on your own premises or in
Public Warehouses. Also for Property stored
in the warehouses of this Company.

All Receipts GUARANTEED by the FIDELITY
& DEPOSIT CO. of Md

A HIGH CLASS COLLATERAL--Accepted in
all money markets.

Baltimore Fidelity Warehouse Co.

BALTIMORE, MARYLAND.

ALBERT G. OBER, President.
T. E. WITTERS, Sec'y & Mgr.

THOS. L. BERRY, Treasurer
AGENCIES:
Equitable Trust Company, Augusta, Ga.
American Trust & Banking Co., Atlanta, Ga.
Other agencies will be established where needed.
Correspondence Solicited.

rated, with \$100,000 capital and the following officers: E. H. Goodrich, president; John McAllen, vice-president, and J. G. Fernandez, cashier.

The People's Bank of Benton, Ark., has been chartered, with \$50,000 capital. The directors are J. K. Bell, president; J. W. Westbrook, vice-president; C. H. Houston, secretary and treasurer; C. G. Johnson and R. M. Fletcher.

The Belton Savings & Trust Co. of Belton, S. C., has received its charter; capital \$25,000. The officers are R. A. Lewis, president and treasurer; Ellison A. Smyth, vice-president, and Walter E. Greer, secretary and cashier.

The United States Co-operative Industrial Life Insurance Association of Eastman, Ga., has applied for a charter. The incorporators are W. N. Leitch, C. H. Peacock, J. C. Rawlins, C. W. Rawlins and Parker Harper of Dodge county.

A new State bank has been organized at Sturgeon, Mo., with \$50,000 capital and the following directors: President, J. M. Proctor; cashier, Manley Board; assistant cashier, R. L. Robinson; T. S. Sweeney, F. L. Sweeney, J. P. Prowell, Frank Seymour, E. N. Gentry and William Dinwiddie; attorney, Thomas I. Carter.

The Interstate Mutual Fire Insurance Co. of Augusta, Ga., is being organized by J. H. Davison, Frederick B. Pope, E. F. Verdery, Thomas Barrett, Jr., T. W. Alexander, T. S. Danforth, Wm. A. Latimer, Boykin Wright, Jas. D. Dawson, Daniel B. Dyer, John W. Dickey, Jas. P. Verdery, H. H. Cumming, Feleg A. Rhodes, Wm. C. M. Buckley, John W. Chaffee, G. R. Lombard and Bryan Cumming.

New Securities.

Wylie, Texas.—Wylie has issued \$5000 of 4 per cent. school bonds.

Arlington, Texas.—Arlington has issued \$15,000 of 4 per cent. school bonds.

Bartlesville, I. T.—Bartlesville has voted to issue \$20,000 of school bonds.

Collinsville, Texas.—Collinsville school district has voted \$10,000 of school bonds.

Groesbeck, Texas.—Limestone county has issued \$20,000 of road and bridge bonds.

Columbus, Ga.—The Columbus Automatic Telephone Co. has issued \$200,000 of 6 per cent. bonds.

Harrodsburg, Ky.—Seasongood & Mayer of Cincinnati have purchased \$18,000 of 5 per cent. electric-light bonds from the city at par.

New Decatur, Ala.—An election has been called for November 16 to decide whether Morgan county shall issue \$150,000 of 5 per cent. road bonds.

Atlanta, Ga.—The city will sell \$300,000 of 30-year 4 per cent. bonds, bids to be received until December 1 at noon. J. H. Goldsmith is city comptroller.

Chicago, Ill.—The Illinois Central Railroad has voted to issue not more than \$20,000,000 of 4 per cent. bonds for funding its debt and for improvements.

Lawton, Okla.—Lawton has voted to issue \$25,000 of bonds, of which \$10,000 will be for a city hall and \$15,000 for a bonus to the Colorado, Oklahoma & Texas Railroad.

Jackson, Miss.—The levee commissioners for the Mississippi district recommend in their report that they be given authority to issue \$1,000,000 of long-time bonds for levee construction.

Kansas City, Mo.—The water-works subcommittee of the bond commission has recommended the sale of \$585,000 of bonds immediately to provide for immediate needs of the water-works.

Houston, Texas.—The Gulf, West Texas & Pacific and the New York, Texas & Mexican Railroad propose to is-

sue bonds on fifty-four miles of road at the rate of about \$15,000 a mile.

Financial Notes.

Tifton county, Tennessee, has given notice that it will pay off twelve of its bonds on or before December 14.

The Mt. Vernon Insurance Co. has been reorganized at Alexandria, Va., and the capital increased from \$50,000 to \$100,000, with \$50,000 surplus. F. F. Marbury was elected president; H. W. Maher of New York, treasurer, and James F. Peyton, secretary.

Hunting in the Maine Woods—Law Off on Moose October 15.

The rush is on! Hundreds are now journeying towards the Maine woods. The sportsman who has tired at blazing at the numerous deer is now waiting for a shot at the big fellows. The law was off on moose last Thursday, and this giant of the forest, the king of the Maine woods, is crashing through the brush of the celebrated Moosehead, Aroostook, Rangeley and Washington county regions, pursued by the enthusiastic Nimrod.

Get your gun and enjoy a week or two in Maine's timber lands.

Health and sport await you. Send a two-cent stamp to the general passenger department, Boston & Maine Railroad, Boston, for the beautiful illustrated booklet called "Fishing and Hunting." It tells all about the game region of Maine and New Brunswick.

Low-Rate Homeseekers' Excursion to Florida.

For the benefit of homeseekers the various railroads to Florida will sell on November 11 special excursion tickets from Washington to the following points at rates quoted:

Sarasota, Fla.	.....	\$30 05
Braidentown, "	.....	29 70
Ellenton, "	.....	29 70
Palmetto, "	.....	29 70
Manatee, "	.....	29 70
Punta Gorda, "	.....	30 90
Arcadia, "	.....	30 15

These tickets will be good going on November 11 only, and to return within fifteen days, and will not be good to stop off in either direction.

In connection with these excursions the Pennsylvania Railroad Co. will sell one-way tickets to Washington at regular rates from all stations on its lines east of Pittsburgh and Erie, together with exchange orders on the railroads out of Washington for an excursion ticket from Washington to the above-mentioned points at rates quoted.

The Winter Resorts South Reached by Southern Railway.

The Southern Railway announces the sale of round-trip winter excursion tickets to all the principal resorts of the South beginning October 15, 1903.

The winter resorts of North and South Carolina, Georgia and Florida are especially inviting to those in search of health or pleasure. In these States are such noted resorts as Pinehurst, N. C.; Camden, Aiken, Summerville, S. C.; Charleston, S. C.; Augusta, Savannah, Brunswick, Jekyll Island and Thomasville, Ga.; Jacksonville, St. Augustine, Ormond, Daytona, Palm Beach, Rockledge, Miami and Tampa, Fla.; also the resorts of Porto Rico and Cuba, best reached via Southern Railway.

Tickets on sale up to and including April 30, 1904, limited to return until May 31, 1904.

Southern Railway affords elegant train service, with the latest Pullman drawing room sleeping cars, operated through between principal cities and resorts, elegant dining-car service and everything for the comfort and pleasure of the traveler.

Ask nearest ticket agent for further information and descriptive literature.

WANTED.

Party with Lath, Stave and Heading Mill, to cut large lot of Pine, Oak and Poplar, in partnership with owner.

Address J. H. OGBURN,
South Hill, Va.

FOREIGN CAPITAL

NOT AFFECTED BY WALL STREET.

J. S. WHITE, Manager, SECURITY LIFE INSURANCE COMPANY, 61 Wall St., NEW YORK.

The Merchants National Bank,

BALTIMORE, MD.

DOUGLAS H. THOMAS, President.
WM. INGLE, Cash. J. C. WANDS, Asst. Cash.

Capital, \$1,500,000.
Surplus and Profits, \$893,000.
Deposits, \$10,150,000.

Accounts of Banks, Bankers, Corporations and Individuals solicited. We invite correspondence.

BONDS TO THE EXTENT OF \$15,000

at a very attractive figure of 20 year 5% coupon, semi-annual, May and November, may be had by addressing for particulars, if at once, through M. E. Thornton, Box 221, Hickory, N. C. The franchise on which they are based is exclusive and the amount already invested is \$32,400.

THORNTON LIGHT & POWER CO.,
HICKORY, N. C.

BONDS.

\$7,000 GEORGIA STATE BONDS,
Registered; 4½%, \$1000 each, due January, 1909.
Yield 3.20%. All or any part for sale by

MARTIN & BRO.

STOCKS, BONDS AND REAL ESTATE,
AUGUSTA, GA.

HIGH GRADE

7 per cent. Preferred Stocks,
in modern, up-to-date Southern Cotton Mills.
Other investment securities also.

F. C. Abbott & Company,
Charlotte, N. C.

GO SOUTH!

For Business Opportunities, Investment Securities, Real Estate, Timber, Mines and Industrial Properties in all parts of the South. Correspond with

Metropolitan Investment Co.

GEO. B. EDWARDS, President, Charleston, S. C.
Commercial and Financial Agent. Business undertaken in all parts of the world. Satisfactory references.

PALMETTO BANK & TRUST CO.

COLUMBIA, S. C.

CAPITAL, \$250,000.

GENERAL BANKING BUSINESS TRANSACTED
In the heart of the great cotton mill development of the South, our services are offered to investigate securities and enterprises.
High class securities offered for sale.

WE INVITE YOUR DEPOSIT ACCOUNT.

United States Mortgage & Trust Company

GEORGE W. YOUNG,
President.

55 Cedar Street. New York. 73d St. and Broadway.

CAPITAL AND SURPLUS FIVE MILLIONS.

Issues Travellers' Letters of Credit and Foreign Drafts.

Industrial Enterprises Organized and Financed.

If you have an Industrial Enterprise you want financed, write me, giving complete description and I will send you full information.

ROBERT ROSS ZELL, M. E., 204 McGowan Bldg., Birmingham, Ala.
Examiner for American Guaranty Company in the South

RICHARD A. BLYTHE, COTTON WARPS AND YARNS, No. 114 Chestnut Street, PHILADELPHIA, PA.

BUCKINGHAM, PAULSON & CO., Commission Merchants,

NEW YORK. COTTON YARNS, PHILA. CHICAGO.

CORRESPONDENCE AND CONSIGNMENTS SOLICITED.

Enabling owners of approved properties to
DEVELOP—EXTEND—EQUIP
INDUSTRIALS, RAILWAYS, MINES,
and similar enterprises. Address, with full details,
SECURITY LIFE INSURANCE COMPANY, 61 Wall St., NEW YORK.

Hibernia Bank & Trust Co.

New Orleans, La.

Capital \$1,000,000 Surplus \$2,000,000
Deposits \$12,000,000

Transacts a general Trust and Banking business, offering every facility to Banks, Bankers and Corporations that their balances and responsibility warrant.

Foreign Exchange bought and sold.
Collections made on all points in the South.
Acts as Trustee under corporate mortgages for railroads and other corporations and as Registrar and Transfer Agent for stock.
High grade investment bonds bought and sold.

OFFICERS:

J. W. CASTLES, President.
G. R. WESTFELDT, Vice President.
JNO. J. GANNON, Vice President.
CHARLES PALFREY, Cashier.
GEORGE FERRIER, Assistant Cashier.
P. L. GIRAULT, Assistant Cashier.
L. M. POOL, Assistant Cashier.
WYATT H. INGRAM, JR., Trust Officer.

Companies Organized Under Corporation Laws of Delaware.

The Laws furnish, at least expense, ample rights to stockholders, with minimum restriction upon corporate action. Charters perpetual, not subject to repeal by the Legislature. Copy of the Law, Blank Forms and Estimate of Expenses furnished by

DELAWARE CORPORATION CO.
106 Market Street, WILMINGTON, DEL.

MOTTU, DeWITT & CO. Southern Investments, NORFOLK, VA.

Correspondence Invited.

ALPHABETICAL INDEX OF ADVERTISERS.

Ads. marked * appear every other week. Ads. marked † appear in first issue of the month. Ads. marked ‡ not in this issue.

For Classified Index See
Pages 3, 5, 7, 9, 11, 13, 15
and 17.

Abbott, F. C., & Co.	31	Sourne-Fuller Co.	33	Detroit Lubricator Co.	51	International Crockett & Co. Co.	49	N. J. Foundry & Mach. Co.	45	Stamm, John. Co.	21
Abrasive Material Co.	41	Sour, The	51	Diamond Drill & Mch. Co.	51	International Mercantile Agency	49	N. Jersey Wire Cloth Co.	45	Stamps, Thos. W., & Co.	21
Acme Road Machinery Co.	43	South & Street Equipment Co.	37	Diamond Steel Steel Co.	29	International Sprinkler Co.	49	N. J. Zinc Co.	45	Stamps, J. B. & G. F.	21
Adams-Bagnall Electric Co.	57	Box 4	37	Dimmick Pipe Co.	55	International Trust Co.	29	Newman Mfg. Co.	29	Stearns, S. H., Co.	21
Adams, J. M.	19	Box 613	37	District of Columbia Charter Co.	25	Ironclad Co., The	29	Newport News Shipbuilding & Dry Dock Co.	29	Skinner Chuck Mfg. Co.	19
Adams Laundry Machinery Co.	9	Bradley Pulveriser Co.	43	Dixie Mfg. Co.	51	Jackson Mfg. Co.	44	Niagara Hydraulic Engine Co.	45	Smith-Courtney Co.	43
Affleck, George E.	47	Braden, Jas. S.	36	Dixon, Jos. Crucible Co.	60	Jenks, W. H.	43	Niagara Mach. & Tool Works	10	Smith, H. B., Machine Co.	19
Atchison, Robt., Perf. Met. Co.	44	Bradley, The, & Co.	47	Dochterman C. B.	31	Jenkins Bros.	47	Nicholson File Co.	28	Smith, S. Morgan, Co.	28
Alabama Coal & Iron Co.	26	Broderick & Bascom Rope Co.	44	Dorrah, Z. T.	33	Jewett, Bigelow & Brooks	26	Niter-Bement-Pond Co.	1	Soule Steam Feed Works	1
Alabama Frog & Switch Co.	20	Brown, A. & F., Co.	36	Downham-Dosier Mfg. Co.	47	Johnson, Charles F.	36	Norfolk & Western Railway	48	Southern Cotton Oil Co.	19
Alabama Iron Works	22	Brown & Sotman Mch. Co.	36	Downs Pump Co.	54	Joseph, Isaac, Iron Co.	33	Norfolk & Western Railway	48	Southern Engine & Boiler Works	19
Alber & Bryne	7	Brown-Cochran Co., The	23	Drake Standard Machine Works	4	Kaiser, A. V., & Co.	35	Norfolk & Western Railway	48	Southern Hotel	19
Albergo Condenser Co.	54	Brown-Corlies Engine Co.	1	Draper Co.	56	Kaolin Mfg. Co.	37	North American Metal Co.	24	Southern Iron & Equipment Co.	36
Alexander Bros.	25	Brownell, The, & Co.	1	Dufur & Co.	45	Kasper Auto Cleaner Co.	45	North American Metal Co.	24	Southern Pipe Covering Co.	19
Alexander, S. B., Jr., Co.	55	Buchanan-Foster Co.	46	Dunn, Wm. J.	50	Keasay Pulley Co.	1	Norton Elevator Mfg. Co.	11	Southern Railway	19
Alleghany Pin & Bracket Co.	55	Buckeye Iron & Brass Works	41	Dunning, W. D.	50	Kelley, W. C.	19, 35, 37	Nye & Tremick	51	Southway Fly & Mch. Co.	19
Allington & Curtis Mfg. Co.	60	Buckingham, Paulson & Co.	31	Dyer, D. H., & Son	50	Kelley Island Lime & Transport Co.	19	Ober Mfg. Co.	49	Spidel, J. G.	43
Allis-Chalmers Co.	14, 27	Buffalo Wire Works Co.	45	Eastern Granite Roofing Co.	47	Kelly, W. C.	19	Obermayer, S. Co.	49	Spier, W. E.	43
Allison, W. D., Co.	53	Burrows Co., E. T.	45	Easton Fly & Mch. Co.	47	Kelly & Taneyhill Co.	36	O'Brien, J. H.	49	Spencer & Hall	43
Alpha Photo-Engraving Co.	53	Burt Mfg. Co.	45	Eclipse Machine Co.	47	Kelly-Springfield Road Roller Co.	41	O'Brien, J. H.	49	Spurgeon Canning Mfg. Co.	43
American	81	Burton Veneer Co.	45	Edson Mfg. Co.	47	Kennedy, L. E., & Co.	35	Old Dominion Iron & Steel Co.	21	Sprout, Walcott & Co.	43
American Air Compressor Wks.	48	Bushnell, G. H., Press Co.	45	Electric Supply Co.	58	Kennedy, Walter	35	Old Dominion Land Co.	21	Standard Caster & Wheel Co.	43
American Blower Co.	15	Byers, John F., Machine Co.	26	Electric Supply Co.	58	Kentucky Electric Co.	42	Onida Steel Pulley Co.	24	Standard Electric Co.	43
American Cement Co.	9	Caine & Platt	37	Empire Chain Company	26	Kilbourne & Jacobs Mfg. Co.	38	Osborn Engineering Co.	7	Standard Faint Co.	43
American Cotton Oil Co.	56	Caldwell, H. W., & Son Co.	4	Engineering Company	26	Kilbourne, Lincoln & Co.	38	Osborn Scale Co.	60	Standard Scale & Tie Co.	43
American Elec. Sup. & Mfg. Co.	25	Caldwell, W. E., Co.	13, 25	Engineering Co. of America	6	Kilburn Locomotive & Mach. Wks	58	Otis Elevator Co., Dry Co.	1	Standard Scale & Tie Co., Ltd.	43
American Engine Co.	25	Cameron, A. S., S. Pump Wks.	54	Erie Pump & Engine Co.	63	Kilburn Locomotive & Mach. Wks	58	Otis Gas Engine Works	4	Standish, A. Estate	43
American Excelsior & Mch. Co.	48	Cameron & Barkley Co.	38	Eureka Fire Hose Co.	45	Kilburn Locomotive & Mach. Wks	58	Palmer, Harmon S., Hollow Gun	58	Starr, B. F., & Co.	27
American Frog & Switch Co.	38	Campbell & Clute Machine Co.	3	Eureka Supply Co.	45	Kilburn Locomotive & Mach. Wks	58	Palmer, Harmon S., Hollow Gun	58	State College of Kentucky	31
American Locomotive Co.	12	Capitol Gas Engine Co.	17	Exchange Bank, Macon Ga.	30	Kilburn Locomotive & Mach. Wks	58	Palmer, Harmon S., Hollow Gun	58	Steel Rail Supply Co.	27
American Machine Co. of Wil-	1	Capitol City Art Glass Works	17	Fairmount Machine Co.	50	Kilburn Locomotive & Mach. Wks	58	Palmer, Harmon S., Hollow Gun	58	Sterling Electrical Mfg.	43
ington, Del.	54	Carbamide Chemical Co.	22	Fay, J. A., & Co., Ltd.	41	Kilburn Locomotive & Mach. Wks	58	Palmer, Harmon S., Hollow Gun	58	Stetson Lumber Co.	49
American Pulley Co.	24	Carborundum Co.	41	Fay, J. A., & Co., Ltd.	41	Kilburn Locomotive & Mach. Wks	58	Palmer, Harmon S., Hollow Gun	58	Stevens, H. Sons Co.	49
American Railway Supply Co.	4	Cardwell Machine Co.	51	Federal Mfg. Co.	41	Kilburn Locomotive & Mach. Wks	58	Palmer, Harmon S., Hollow Gun	58	Stewart, John A., Electric Co.	36
American Roofing Co.	47	Carey, George H.	38	Federal Mfg. Co.	41	Kilburn Locomotive & Mach. Wks	58	Palmer, Harmon S., Hollow Gun	58	Stewart, John A., Electric Co.	36
American Sheet Steel Co.	25	Carey, Philip, Mfg. Co.	46	Federal Mfg. Co.	41	Kilburn Locomotive & Mach. Wks	58	Palmer, Harmon S., Hollow Gun	58	Stewart, John A., Electric Co.	36
American Ship Windlass Co.	2	Carlson, Chas. W., & Co.	6	Federal Mfg. Co.	41	Kilburn Locomotive & Mach. Wks	58	Palmer, Harmon S., Hollow Gun	58	Stewart, John A., Electric Co.	36
American Spiral Pipe Works	63	Carnell, George	41	Federal Mfg. Co.	41	Kilburn Locomotive & Mach. Wks	58	Palmer, Harmon S., Hollow Gun	58	Stewart, John A., Electric Co.	36
American Steam Gauge & Valve	19	Caroline Portland Cement Co.	48	Federal Mfg. Co.	41	Kilburn Locomotive & Mach. Wks	58	Palmer, Harmon S., Hollow Gun	58	Stewart, John A., Electric Co.	36
Mfg. Co.	19	Caroline Portland Cement Co.	48	Federal Mfg. Co.	41	Kilburn Locomotive & Mach. Wks	58	Palmer, Harmon S., Hollow Gun	58	Stewart, John A., Electric Co.	36
American Steam Pump Co.	54	Carroll Iron Works	48	Federal Mfg. Co.	41	Kilburn Locomotive & Mach. Wks	58	Palmer, Harmon S., Hollow Gun	58	Stewart, John A., Electric Co.	36
American Supply Co.	51	Carver Cotton Gin Co.	50	Federal Mfg. Co.	41	Kilburn Locomotive & Mach. Wks	58	Palmer, Harmon S., Hollow Gun	58	Stewart, John A., Electric Co.	36
American Tin Plate Co.	46	Cary Spring Works	49	Federal Mfg. Co.	41	Kilburn Locomotive & Mach. Wks	58	Palmer, Harmon S., Hollow Gun	58	Stewart, John A., Electric Co.	36
American Type Founders Co.	46	Casey, D. L., Machine Co.	27	Federal Mfg. Co.	41	Kilburn Locomotive & Mach. Wks	58	Palmer, Harmon S., Hollow Gun	58	Stewart, John A., Electric Co.	36
Andrews & Johnson Co.	51	Cassner, Curran & Bullitt	26	Federal Mfg. Co.	41	Kilburn Locomotive & Mach. Wks	58	Palmer, Harmon S., Hollow Gun	58	Stewart, John A., Electric Co.	36
Andrews, Perry, & Bro.	54	Chattanooga Machinery Co.	49	Federal Mfg. Co.	41	Kilburn Locomotive & Mach. Wks	58	Palmer, Harmon S., Hollow Gun	58	Stewart, John A., Electric Co.	36
Anthracite Mch. & Supply Co.	37	Chattanooga Roof & Dry Co.	7	Federal Mfg. Co.	41	Kilburn Locomotive & Mach. Wks	58	Palmer, Harmon S., Hollow Gun	58	Stewart, John A., Electric Co.	36
Appraisal & Audit Co. of Amer.	20	Chattanooga Roof & Dry Co.	7	Federal Mfg. Co.	41	Kilburn Locomotive & Mach. Wks	58	Palmer, Harmon S., Hollow Gun	58	Stewart, John A., Electric Co.	36
Arctic Machine Co.	4	Chattanooga Roof & Dry Co.	7	Federal Mfg. Co.	41	Kilburn Locomotive & Mach. Wks	58	Palmer, Harmon S., Hollow Gun	58	Stewart, John A., Electric Co.	36
Armitage Mfg. Co.	24, 47	Chattanooga Roof & Dry Co.	7	Federal Mfg. Co.	41	Kilburn Locomotive & Mach. Wks	58	Palmer, Harmon S., Hollow Gun	58	Stewart, John A., Electric Co.	36
Armstrong, R. S., & Bro.	38	Chattanooga Roof & Dry Co.	7	Federal Mfg. Co.	41	Kilburn Locomotive & Mach. Wks	58	Palmer, Harmon S., Hollow Gun	58	Stewart, John A., Electric Co.	36
Asphalt Ready Roofing Co.	46	Chattanooga Roof & Dry Co.	7	Federal Mfg. Co.	41	Kilburn Locomotive & Mach. Wks	58	Palmer, Harmon S., Hollow Gun	58	Stewart, John A., Electric Co.	36
Atcherson Machine Co., A. T.	1	Chattanooga Roof & Dry Co.	7	Federal Mfg. Co.	41	Kilburn Locomotive & Mach. Wks	58	Palmer, Harmon S., Hollow Gun	58	Stewart, John A., Electric Co.	36
Atkins, E. C., & Co.	48	Chattanooga Roof & Dry Co.	7	Federal Mfg. Co.	41	Kilburn Locomotive & Mach. Wks	58	Palmer, Harmon S., Hollow Gun	58	Stewart, John A., Electric Co.	36
Atlas Engine Works	17	Chattanooga Roof & Dry Co.	7	Federal Mfg. Co.	41	Kilburn Locomotive & Mach. Wks	58	Palmer, Harmon S., Hollow Gun	58	Stewart, John A., Electric Co.	36
Audel, Theo., & Co.	4	Chattanooga Roof & Dry Co.	7	Federal Mfg. Co.	41	Kilburn Locomotive & Mach. Wks	58	Palmer, Harmon S., Hollow Gun	58	Stewart, John A., Electric Co.	36
Audit Co. of New York	36	Chattanooga Roof & Dry Co.	7	Federal Mfg. Co.	41	Kilburn Locomotive & Mach. Wks	58	Palmer, Harmon S., Hollow Gun	58	Stewart, John A., Electric Co.	36
Aulman Co., The	41	Chattanooga Roof & Dry Co.	7	Federal Mfg. Co.	41	Kilburn Locomotive & Mach. Wks	58	Palmer, Harmon S., Hollow Gun	58	Stewart, John A., Electric Co.	36
Austin Mfg. Co.	43	Chattanooga Roof & Dry Co.	7	Federal Mfg. Co.	41	Kilburn Locomotive & Mach. Wks	58	Palmer, Harmon S., Hollow Gun	58	Stewart, John A., Electric Co.	36
B. and S.	34	Chattanooga Roof & Dry Co.	7	Federal Mfg. Co.	41	Kilburn Locomotive & Mach. Wks	58	Palmer, Harmon S., Hollow Gun	58	Stewart, John A., Electric Co.	36
Bacon & Wilcox Co.	19	Chattanooga Roof & Dry Co.	7	Federal Mfg. Co.	41	Kilburn Locomotive & Mach. Wks	58	Palmer, Harmon S., Hollow Gun	58	Stewart, John A., Electric Co.	36
Bacon Air Lift Co.	54	Chattanooga Roof & Dry Co.	7	Federal Mfg. Co.	41	Kilburn Locomotive & Mach. Wks	58	Palmer, Harmon S., Hollow Gun	58	Stewart, John A., Electric Co.	36
Bader, E. B., & Sons Co.	1	Chattanooga Roof & Dry Co.	7	Federal Mfg. Co.	41	Kilburn Locomotive & Mach. Wks	58	Palmer, Harmon S., Hollow Gun	58	Stewart, John A., Electric Co.	36
Bader Fire Extinguisher Co.	50	Chattanooga Roof & Dry Co.	7	Federal Mfg. Co.	41	Kilburn Locomotive & Mach. Wks	58	Palmer, Harmon S., Hollow Gun	58	Stewart, John A., Electric Co.	36
Bader, Adamson & Co.	38	Chattanooga Roof & Dry Co.	7	Federal Mfg. Co.	41	Kilburn Locomotive & Mach. Wks	58	Palmer, Harmon S., Hollow Gun	58	Stewart, John A., Electric Co.	36
Bailey-Labby Co.	10	Chattanooga Roof & Dry Co.	7	Federal Mfg. Co.	41	Kilburn Locomotive & Mach. Wks	58	Palmer, Harmon S., Hollow Gun	58	Stewart, John A., Electric Co.	36
Baldy, John T., & Co.	9	Chattanooga Roof & Dry Co.	7	Federal Mfg. Co.	41	Kilburn Locomotive & Mach. Wks	58	Palmer, Harmon S., Hollow Gun	58	Stewart, John A., Electric Co.	36
Baird, Machinery Co.	10	Chattanooga Roof & Dry Co.	7	Federal Mfg. Co.	41	Kilburn Locomotive & Mach. Wks	58	Palmer, Harmon S., Hollow Gun	58	Stewart, John A., Electric Co.	36
Baker, H. C., & Co.	36	Chattanooga Roof & Dry Co.	7	Federal Mfg. Co.	41	Kilburn Locomotive & Mach. Wks	58	Palmer, Harmon S., Hollow Gun	58	Stewart, John A., Electric Co.	36
Baker, Stillwell & Hart	35	Chattanooga Roof & Dry Co.	7	Federal Mfg. Co.	41	Kilburn Locomotive & Mach. Wks	58	Palmer, Harmon S., Hollow Gun	58	Stewart, John A., Electric Co.	36
Baldwin Locomotive Works	13	Chattanooga Roof & Dry Co.	7	Federal Mfg. Co.	41	Kilburn Locomotive & Mach. Wks	58	Palmer, Harmon S., Hollow Gun	58	Stewart, John A., Electric Co.	36
Ball Engine Co.	17	Chattanooga Roof & Dry Co.	7	Federal Mfg. Co.	41	Kilburn Locomotive & Mach. Wks	58	Palmer, Harmon S., Hollow Gun	58	Stewart, John A., Electric Co.	36
Ball & Wood Co.	1	Chattanooga Roof & Dry Co.	7	Federal Mfg. Co.	41	Kilburn Locomotive & Mach. Wks	58	Palmer, Harmon S., Hollow Gun	58	Stewart, John A., Electric Co.	36
Baltimore Belting Co.	1	Chattanooga Roof & Dry Co.	7	Federal Mfg. Co.	41	Kilburn Locomotive & Mach. Wks	58	Palmer, Harmon S., Hollow Gun	58	Stewart, John A., Electric Co.	36
Baltimore Engine Co.	17	Chattanooga Roof & Dry Co.	7	Federal Mfg. Co.	41	Kilburn Locomotive & Mach. Wks	58	Palmer, Harmon S., Hollow Gun	58	Stewart, John A., Electric Co.	36
Balto. Fidelity Warehouse Co.	30	Chattanooga Roof & Dry Co.	7	Federal Mfg. Co.	41	Kilburn Locomotive & Mach. Wks	58	Palmer, Harmon S., Hollow Gun	58	Stewart, John A., Electric Co.	36
Baltimore-Maryland Engr. Co.	1	Chattanooga Roof & Dry Co.	7	Federal Mfg. Co.	41	Kilburn Locomotive & Mach. Wks	58	Palmer, Harmon S., Hollow Gun	58	Stewart, John A., Electric Co.	36
Balt. Shipbldg. & Dry Dock Co.	60	Chattanooga Roof & Dry Co.	7	Federal Mfg. Co.	41	Kilburn Locomotive & Mach. Wks	58	Palmer, Harmon S., Hollow Gun	58	Stewart, John A., Electric Co.	36
Baltimore Steam Packet Co.	63	Chattanooga Roof & Dry Co.	7	Federal Mfg. Co.	41	Kilburn Locomotive & Mach. Wks	58	Palmer, Harmon S., Hollow Gun	58	Stewart, John A., Electric Co.	36
Barnes, W. F., & John, Co.	11	Chattanooga Roof & Dry Co.	7	Federal Mfg. Co.	41	Kilburn Locomotive & Mach. Wks	58	Palmer, Harmon S., Hollow Gun	58	Stewart, John A., Electric Co.	36
Barnett, G. H., & Co.	60	Chattanooga Roof & Dry Co.	7	Federal Mfg. Co.	41	Kilburn Locomotive & Mach. Wks	58	Palmer, Harmon S., Hollow Gun	58	Stewart, John A., Electric Co.	36
Barr & Elam	6	Chattanooga Roof & Dry Co.	7	Federal Mfg. Co.	41	Kilburn Locomotive & Mach. Wks	58	Palmer, Harmon S., Hollow Gun	58	Stewart, John A., Electric Co.	36
Barr, H. G.	1	Chattanooga Roof & Dry Co.	7	Federal Mfg. Co.	41	Kilburn Locomotive & Mach. Wks	58	Palmer, Harmon S., Hollow Gun	58	Stewart, John A., Electric Co.	36
Barrett Mfg. Co.	25	Chattanooga Roof & Dry Co.	7	Federal Mfg. Co.	41	Kilburn Locomotive & Mach. Wks	58	Palmer, Harmon S., Hollow Gun	58	Stewart, John A., Electric Co.	36
Bartlett, C. O., & Snow Co.	9	Chattanooga Roof & Dry Co.	7	Federal Mfg. Co.	41	Kilburn Locomotive & Mach. Wks	58	Palmer, Harmon S., Hollow Gun	58	Stewart, John A., Electric Co.	36
Bates, James, Sonns	40	Chattanooga Roof & Dry Co.	7	Federal Mfg. Co.	41	Kilburn Locomotive & Mach. Wks	58	Palmer, Harmon S., Hollow Gun	58	Stewart, John A., Electric Co.	36
Bates Machine Co.	18	Chattanooga Roof & Dry Co.	7	Federal Mfg. Co.	41	Kilburn Locomotive & Mach. Wks	58	Palmer, Harmon S., Hollow Gun	58	Stewart, John A., Electric Co.	36
Bates, Wm. H., Jr.	38	Chattanooga Roof & Dry Co.	7	Federal Mfg. Co.	41	Kilburn Locomotive & Mach. Wks	58	Palmer, Harmon S., Hollow Gun	58	Stewart, John A., Electric Co.	36
Beach, H. W.	49	Chattanooga Roof & Dry Co.	7	Federal Mfg. Co.	41	Kilburn Locomotive & Mach. Wks	58	Palmer, Harmon S., Hollow Gun	58	Stewart, John A., Electric Co.	36
Beckley, A. J., Co.	41	Chattanooga Roof & Dry Co.	7	Federal Mfg. Co.	41	Kilburn Locomotive & Mach. Wks	58	Palmer, Harmon S., Hollow Gun	58	Stewart, John A., Electric Co.	36
Belmont Iron Works	46	Chattanooga Roof & Dry Co.	7	Federal Mfg. Co.	41	Kilburn Locomotive & Mach. Wks	58	Palmer, Harmon S., Hollow Gun	58	Stewart, John A., Electric Co.	36
Benbow Co.	40	Chattanooga Roof & Dry Co.	7	Federal Mfg. Co.	41	Kilburn Locomotive & Mach. Wks	58	Palmer, Harmon S., Hollow Gun	58	Stewart, John A., Electric Co.	36
Bennett, G. L.	25, 26	Chattanooga Roof & Dry Co.	7	Federal Mfg. Co.	41	Kilburn Locomotive & Mach. Wks	58	Palmer, Harmon S., Hollow Gun	58	Stewart, John A., Electric Co.	36
Berger, Anton J.	36	Chattanooga Roof & Dry Co.	7	Federal Mfg. Co.	41	Kilburn Locomotive & Mach. Wks	58	Palmer, Harmon S., Hollow Gun	58	Stewart, John A., Electric Co.	36
Berry Hill Min. Spg. Co., of Va.	19	Chattanooga Roof & Dry Co.	7	Federal Mfg. Co.	41	Kilburn Locomotive & Mach. Wks	58	Palmer, Harmon S., Hollow Gun	58	Stewart, John A., Electric Co.	36
Bertsch & Co.	10	Chattanooga Roof & Dry Co.	7	Federal Mfg. Co.	41	Kilburn Locomotive & Mach. Wks	58	Palmer, Harmon S., Hollow Gun	58	Stewart, John A., Electric Co.	36
Bickford Drill & Tool Co.	1	Chattanooga Roof & Dry Co.	7	Federal Mfg. Co.	41	Kilburn Locomotive & Mach. Wks	58	Palmer, Harmon S., Hollow Gun	58	Stewart, John A., Electric Co.	36
Big Brushy Coal & Coke Co.	9	Chattanooga Roof & Dry Co.	7	Federal Mfg. Co.	41	Kilburn Locomotive & Mach. Wks	58	Palmer, Harmon S., Hollow Gun	58	Stewart, John A., Electric Co.	36
'Big Four'	52	Chattanooga Roof & Dry Co.	7	Federal Mfg. Co.	41	Kilburn Locomotive & Mach. Wks	58	Palmer, Harmon S., Hollow Gun	58	Stewart	

PROPOSALS.

TREASURY DEPARTMENT. Office of the Supervising Architect, Washington, D. C., October 14, 1903.—Sealed proposals will be received at this office until 3 o'clock P. M. on the 15th day of November, 1903, and then opened, for the construction (including plumbing and heating apparatus) of Stable and Laundry Building, United States Bureau Engraving and Printing, Washington, D. C., in accordance with drawings and specification, copies of which may be had at this office. JAMES KNOX TAYLOR, Supervising Architect.

TREASURY DEPARTMENT. Office of the Supervising Architect, Washington, D. C., October 14, 1903.—Sealed proposals will be received at this office until 3 o'clock P. M. on the 15th day of November, 1903, and then opened, for the construction (including plumbing, heating apparatus, electric wiring and conduits) of the United States Postoffice, Custom-House, etc., extension of Jacksonville, Fla., in accordance with drawings and specification, copies of which may be had at this office, or at the office of the Custodian at Jacksonville, Fla., at the discretion of the Supervising Architect. JAMES KNOX TAYLOR, Supervising Architect.

TREASURY DEPARTMENT. Office of the Supervising Architect, Washington, D. C., October 24, 1903.—Sealed Proposals will be received at this office until 3 o'clock P. M. on the 17th day of November, 1903, and then opened, for the low pressure steam heating apparatus, complete in place, for the U. S. Post Office at Lockport, N. Y., in accordance with drawings and specification, copies of which may be had at this office or at the office of the Superintendent at Lockport, N. Y., at the discretion of the Supervising Architect. JAMES KNOX TAYLOR, Supervising Architect.

SEALED PROPOSALS. in duplicate, for grade raising at Galveston, Texas, involving over 11,000,000 cubic yards of filling, will be received by the Chairman of the Grade Raising Board, until 2 P. M., December 7, 1903, and then publicly opened. For information apply to E. R. CHEESBOROUGH, Secretary Grade Raising Board, Galveston, Texas. C. S. RICKE, Consulting Engineer.

FORT MYER, VA., October 23d, 1903.—Sealed proposals, in triplicate, for constructing Blacksmith Shop, Guardhouse and extension to Riding Hall, will be received until 10 A. M. November 21, 1903. The U. S. reserves right to reject any or all bids or any part thereof. Information on application. Envelopes containing bids should be endorsed "Proposals for Buildings," addressed CAPT. W. F. CLARK, Q. M.

ADVERTISEMENT FOR SEALED BIDS.—It is ordered that the Clerk of the Board of Supervisors be and he is hereby directed to advertise for sealed proposals for repairing the Court House, according to plans and specifications now on file in his office. The repairs consisting of underpinning and putting a new foundation around three sides of said building. It is further ordered that the advertisement be inserted in the Manufacturers' Record, a journal published in Baltimore, Md. By order of the Board, this October 7th, 1903. According to the above, I will receive bids until 9 o'clock on Monday morning, November 2d, 1903. Macon, Miss. Z. T. DORROH, Clerk.

NOTICE OF SALE OF BONDS.—The undersigned, treasurer of Claiborne County, Mississippi, will from this date until the 2nd day of November 1903, receive sealed bids for the \$20,000 00 1/2 bonds of Claiborne County, Mississippi, provided for at the October, 1903, meeting of the Board of Supervisors of said County, at Port Gibson. Said bids will be opened on said 2nd day of November, and will be sold to the highest bidder. No bid less than par will be considered. A certified check for \$500.00 must be deposited with each bid. C. B. DOUGHTERMAN, County Treasurer.

Notice to Contractors.

For the furnishing of labor and materials for the erection of a new Courthouse and Jail, in accordance with the plans and specifications now on file in the Probate Judge's Office at Dothan, Ala., and prepared by Andrew J. Bryan & Co., Architects, of New Orleans, La., 1104 Hennen Building, and under their supervision, the Board of County Commissioners of Houston County, Alabama, will receive bids up to 12 o'clock noon, Monday, November 2, 1903, at which time the same will be opened. All bids must be addressed to the "HON. GEORGE LESLIE," Probate Judge, and marked "COURT-HOUSE PROPOSALS." The same must be in his hands on or before 12 o'clock of the above day, or they will not be received. Each bidder must submit with his proposal for the Courthouse a certified check in the amount of Twenty-five Hundred (\$2500) Dollars, and also a certified check with his proposal for the Jail in the amount of One Thousand (\$1000) Dollars, as a guarantee of good faith that he will, if his bid should be accepted, make and execute a Surety Company Bond satisfactory to the Board, in the amount of the Contract Price for each building. In failure so to do, in either case, the check so submitted will be forfeited to the County as damage.

The two buildings will be constructed of such materials as are set forth in the plans and specifications. Concrete footings, hard-burned brick laid in cement in foundations. The exterior will be press brick and stone; the roof covered with slate, and the floors to be fireproof construction. Ceilings to be stamped steel. Payments to be made in cash. For information pertaining to the general financial conditions of the County, confer with Hon. George Leslie, Probate Judge. For information pertaining to plans and specifications, confer with the architects. All persons desiring to bid on the above work can secure plans and specifications upon application to the architects, together with proposal sheets. The Board of County Commissioners reserves the right to accept any or reject all bids.

PITTSBURG
METER CO.

MAKERS OF

WATER METERS
AND
GAS METERS

OFFICE AND WORKS:

East Pittsburg, Pa.

STATE COLLEGE of KENTUCKY

COMPRISING LEXINGTON, KY.

School of Mechanical & Electrical Engineering,
School of Civil Engineering,
School of Mining Engineering,
School of Chemical Engineering, and
Summer School in Mech-nic Arts.

JAMES K. PATTERSON, President.

The Capitol City Art Glass Works

C. V. PINION, — GEO. M. JOCHUM,

Proprietors.

Manufacturers of

Art Glass, Leaded Glass, Metal Sash and Bevel Plate

Work, Memorial Windows, Church Work, Etc.

All Orders Promptly Filled.

705 Marietta St., ATLANTA, GA.
Long Distance Telephone.

BREMEN MERCHANT, in close connection with the managers of the principal industrial concerns, as well as with farmers and sugar manufacturers in the interior, is desirous of representing first-class American firms for the sale of industrial and agricultural machinery in Germany. Highest references on application. Address H. B., P. O. Box 993, NEW YORK CITY.

CEMENT EDITION.

24 pages, 10x12, of splendidly illustrated matter, educational in its scope, covering in a comprehensive way the wonderful growth of the American cement trade and the many remarkable aspects of this remarkable industry. Will be mailed on receipt of 10 cents and mention of this paper.

THE WESTERN MINER & FINANCIER.
Cooper Building, Denver, Colorado.

SITUATIONS WANTED.

Advertisements under this head will be inserted at the rate of one cent a word for each insertion.

WRITE TO US

For Competent

TECHNICAL MEN

For all classes of work.

5,000 positions filled in 10 years.

Engineering Agency,

120 Monadnock Block, CHICAGO.

DRY MIXER
The BROUGHTON
FOR
Hard Plaster, Cement, Paint, &c.
W. D. DUNNING,
86 W. Water St.,
SYRACUSE, N. Y.

The Boomer & Boschert

KNUCKLE JOINT

PRESS

For Baling Cloth, Paper, Yarn, &c.

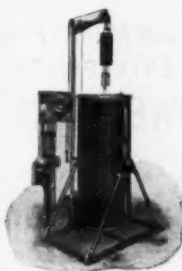
Or for any other purpose requiring great pressure.

BOOMER & BOSCHERT PRESS CO.

306 W. Water St., Syracuse, N. Y.

If you want to reach the possible land buyers and investors in the North and West who are thinking of locating in the South, advertise in the SOUTHERN FARM MAGAZINE. Published by the Manufacturers' Record Publishing Co., Baltimore, Md.

THE
BOURNE-FULLER CO.
IRON, STEEL,
PIG IRON,
COKE.
Cleveland, Ohio.

AUTOMATIC
Patent Cylindrical Electric Copier

(PATENT APPLIED FOR)

ARE PERFECT IN EVERY RESPECT.

Write for Catalogue.

PITTSBURG BLUE PRINT CO.

1505 P Park Bldg.,

PITTSBURG, PA.

FRANK B. GILBRETH,

General Contractor

For Works of magnitude where the time for completion is limited.

BOSTON.

NEW YORK.

LONDON.

Daily Capacity
150 Cars.

JOHN H. KIRBY, President.

Capital
\$10,000,000.00

Kirby Lumber Co.

General Office, Houston, Tex.

MANUFACTURERS OF

Saw Products of Long
Leaf Yellow Pine Trees.

We can S4S up to 20x30.

We can Saw up to 70 ft.

Sixteen mills in operation, two more building. These mills are located on two of the greatest railway systems in the South, reducing difficulty arising from lack of cars to a minimum.

We are the Largest Producers of Yellow Pine Lumber in the World.

Address all correspondence to

V. A. LONGAKER,

General Sales Agent,

HOUSTON, TEX.

No order too large for our facilities or too small for our prompt attention.

Correspondence Solicited.

SPECIAL Advertisements OF GENERAL Interest.

OPPORTUNITIES FOR INVESTORS.

ADVERTISING RATES FOR SPECIAL ADVERTISEMENTS:

Inches	1 time.	2 times.	3 times.	4 times.
1.....	\$1.75.....	\$3.00.....	\$4.25.....	\$5.00.....
2.....	3.00.....	5.50.....	8.00.....	10.00.....
3.....	4.25.....	8.00.....	11.75.....	15.00.....
4.....	5.50.....	10.50.....	15.50.....	20.00.....
5.....	6.75.....	13.00.....	19.25.....	25.00.....
6.....	8.00.....	15.00.....	22.00.....	28.00.....
1/4 page (13 in.).....	16.00.....	30.00.....	42.00.....	52.00.....

Coal, Iron and Timber Lands.

Parties desirous of investing in Timber, Coal, Lime or Cement properties in West Virginia are respectfully invited to apply to

R. P. PEARSON,
Mining Engineer and Surveyor.
Parsons, Tucker Co., W. Va.

Southern Investments

COAL and IRON Properties
are my Specialty.

If you have a dividend-paying property to sell or wish to buy, write me. The larger the deal the better.

BANK REFERENCES FURNISHED.
R. E. WATSON, 401-402 Empire Bldg., ATLANTA, GA.

FOR SALE.

Long Leaf Yellow Pine Timber Land.

Thirty-five thousand acres in Calcasieu Parish, Louisiana; twenty-four thousand acres guaranteed to cut twelve thousand per acre; eleven thousand guaranteed to cut ten thousand per acre. Directly on railroad. Well blocked. Titles perfect. Principals only.
J. W. PRENTISS, 51 Highland St., Bangor, Me.

THE UNIVERSITY School for Boys,

1205 Cathedral St., Baltimore, Md.

(INCORPORATED).

W. S. MARSTON, A. B. & C. E., Prin'l.
23d Year Began Thursday, Sept. 25th.

The most fully-equipped Day School for Boys in the South. Primary, Junior and Senior Sections. In the Primary Section, in which the number is limited to 30, boys are taken as young as seven. In June of last year the school had successful candidates for admission to the Johns Hopkins, Harvard, Princeton, The Massachusetts Institute of Technology, Lehigh University and Haverford College.

There is a large and fully-equipped Gymnasium Play Ground, Library and Reading Room. The buildings are the best lighted and ventilated of any in Baltimore.

Catalogues at the Johns Hopkins and at the book stores. For further information address the Principal at 1205 Cathedral St., or apply at the school.

BOARDING PUPILS.

A limited number of Boarding Pupils will be taken into the families of the teachers, where they will receive all the care and attention of home life.

INVESTIGATE

That means examine the

STIEFF PIANOS

as well as others. You will find in it merits that deserve your consideration.

You Know Its Reputation.

You know it's made at home.
You know your friends use and like it.
You know it's been established since 1849.

If You Can't Pay Cash, Buy and Pay Monthly
OTHER PIANOS—New and Second-Hand.

Uprights—\$100—\$150—etc., up.
Squares—\$200—\$250—up.
Organs—\$250—up.

STIEFF'S, 9 N. Liberty St.

BALTIMORE, MD.

Water Powers and Mill Sites.

UNRIVALLED LOCATION FOR INDUSTRIAL ENTERPRISES

WATER POWER 24 Hours Use Daily.

\$15.00 per Horse Power per Year.
46 Feet Head and Fall at

Weldon, North Carolina

80 miles from Norfolk, Va. 12 hours travel from New York City. At junction of A. C. L. and S. A. L. Railway Systems. Steamboat to tidewater.

Free Building Sites, Banks, Schools, Electric Lights and Electric Power.

ROANOKE NAVIGATION & WATER POWER CO.

JAS. W. WILSON, President,
Write for Booklet. WELDON, N. C.

The W. T. Weaver Power Company, ASHEVILLE, N. C.

now offers electric power, at very low rates for manufacturing purposes, from its Power Station on the French Broad River, four miles from the City of Asheville, N. C.

This Development Yields
3000 Horse Power.

Good Factory Sites, Cheap Power, Abundant Labor of the best quality, Good Railroad Facilities, Ideal Climatic Conditions, Pure Water for Bleacheries and Finishing Plants from a mountain creek running through the premises, having a discharge of 5,000,000 gallons in 24 hours, are some of the merits of this locality that will command the consideration of manufacturers.

For particulars, address

W. T. WEAVER, President.

ASHEVILLE, N. C.

Miscellaneous Properties and Investment Opportunities.

WANTED.

Axe Handle Shapes and Turned
Axe Handles in the Rough,

Car load lots, for cash.

STANDARD HANDLE CO., Ltd.
KNOXVILLE, TENNESSEE

FOR QUICK ACCEPTANCE.

We offer for sale an up-to-date milling plant, with dry kilns and planing mill attached. At the junction of two trunk lines of railroad. Timber has been estimated to cut about 23,000,000 feet. Rate to Brunswick, Ga., a deep water port, \$6.00 per car. Price \$25,000 cash.

This is a going concern and is ready for buyer to step right into a paying business. Good reasons given for wanting to sell.

BRONSTON, FENDIG & CO.,

Brunswick, Ga.

FOR SALE A SAW AND PLANING MILL

Proposition on Railroad within 30 miles of Mobile, Ala. Capacity of saw mill, 25,000 feet per day, dry kiln and planing mill, 12,500 feet. 18,000 acres longleaf yellow pine timber lands that will estimate between 90,000,000 and 100,000,000 feet. 10,000 acres additional can be secured at reasonable prices in the same territory, and the whole can be logged with less than 9 miles railroad. To a party with sufficient capital to handle it this offers an unexpected opportunity to get into a going and profitable business. Reason for selling, other interests demand undivided attention. Write quick. This is a good thing and will not last long. Address

BOX 632, Mobile, Ala.

For Sale. The Old Pickens Plantation.

Located near Dyson's Post Office on C. & W. C. R. R., containing 1800 acres. 1500 acres in Greenwood County and 300 acres in Newbury County, S. C. Improvements—dwelling and twelve tenant houses. Iron bridge spans Saluda River, which flows through plantation. Best STOCK FARM in South Carolina. Price \$15,000.00. Address

Clarence E. Clark,
AUGUSTA, GEORGIA.

WE OWN IDEAL VIRGIN RICE LAND,

fifteen miles from New Orleans, on the Southern Pacific Railroad. Plenty of water for irrigation, Rich Soil suitable for Cotton, Corn, Sugar and Truck. Will sell very cheap now on long and easy payments, in tracts to suit. Special inducements to organize planting companies. Write at once for particulars.

O. H. WINEGAR, LLOYD POSEY,
Cont. Nat. Bank Bldg. Masonic Temple,
St. Louis, Mo. New Orleans, La.

FOR SALE.

Completely equipped plant for **Agricultural Implements, Railroad Supplies, General Contracting, Fine Repair Business.** Capacity, 200 men. Rail and water transportation. No strikes; cheap labor, timber and iron. Beautiful residence city; southeast. For sale at great bargain.

WILLIAM MARTIN & COMPANY,
12 St. Paul St., Baltimore, Md.

WANTED.

A competent business man to take \$5000 or \$10,000 worth of stock in well paying business. Address

B. & S., care Manufacturers' Record.

CHARCOAL

For Sale by Carload.

J. A. MATHIEU,
Georgetown, S. C.

"Millions for Farmers"

**TEXAS
TOBACCO
TRACTS**

Write for Full Information to

Exhaustive tests prove that the finest grade of

CUBAN LEAF

The **SOUTHERN PACIFIC**

Soils and Climate similar to famous Vuelta Abajo District of Pinar del Rio, Cuba.

T. J. ANDERSON, General Passenger Agent,

HOUSTON, TEX.

So Says Secretary Wilson
U. S. Dep't of Agriculture.

J. J. ROBERTS & CO.

NEWPORT NEWS, VA.

FOR SALE. Filter Sand Business,

including building and machinery,
for \$3500. Plant now in operation.
For particulars, address

P. O. Box 190, Portsmouth, Va.

Valuable Mineral Property for Sale

The N. C. Bessemer Co. has 3700 acres of land for sale in McDowell County, N. C., on the Southwestern R. R. containing large quantities of hard and soft timber, an immense amount of marble and lime stone, fine water power and large quantities of hard and soft iron ore, veins from 4 to 10 feet thick, analysis runs high in iron; also indications of copper. For further descriptions, address,

J. C. McCaskill, Maxton, N. C.

FOR SALE OR TO RENT.

The Clark's Falls, Conn. Property, consisting of a two and one-half story mill, 138x38ft., with good water power, main shafting and piped for steam heat; boiler house with boiler, dye-house with an overhead supply of pure water for dyeing, finishing or bleaching purposes; stock-house, picker-house and fourteen tenements. It is situated six miles from Westerly, R. I. If anyone should desire, will rent factory without tenements. Apply to **E. W. CLARKE,**
8 Lincoln Ave., Westerly, R. I.

WANTED.

An experienced business man in Canada for a partner to secure the patent arrangement and exploit the same in methods of making charcoal, &c. U. S. patent is dated April 7, 1903, serial No. 85,046. Full information given by

F. W. NEWBERGER, Stempor, Fla.

FOR SALE. 2000 Barrels Coal Tar.

CARLOADS AND LESS.

ARMITAGE MFG. CO., RICHMOND, VA.

WANTED.—Party to invest \$5000 in stock of company now being organized for manufacture of iron beds in Alabama. Eight per cent. and dividends guaranteed on stock. Address K. Z., Manufacturers' Record.

FOR SALE.

One Hydraulic Shear, 40-in. cylinder, 16-in. stroke, designed to cut 10x12-in. billets with 700 lbs. pressure. Manufactured by Geo. A. Hogg Iron & Steel Co., Pittsburgh. Shear has never been erected. Address

GUY DARST, G. S. A.,
Va. Iron, Coal & Coke Co. Bristol, Tenn.

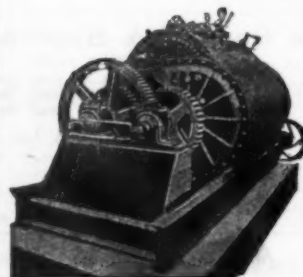
WE WANT TO REPRESENT MANUFACTURERS

for all classes of machinery and building material for this immediate vicinity and for the Southern States, and solicit your account as distributing agents.

A good opportunity is offered by us to make quick sales. Address

J. J. ROBERTS & CO.

NEWPORT NEWS, VA.



The Schwarz-System Brick Company,

SAND-LIME BRICK ENGINEERS.

Factories Built by Us are Built Right
and Run Right.

Chemicals Are Not Necessary to
Make Good Sand-Lime Brick.

6-8-10 BRIDGE ST.,
MARITIME BLDG.,

New York.

Bargains in Machinery

FOR IMMEDIATE DELIVERY.

BOILERS.

- 1 175 H. P. Locomotive type, 150 lbs. pressure.
- 1 150 and 125 H. P. Locomotive type, 150 lbs. pressure.
- 1 250 H. P. Babcock & Wilcox, 150 lbs. pressure.
- 1 250 and 200 H. P. Heine, 150 lbs. pressure.
- 1 375 H. P. National, Watertube, 150 lbs. pressure.
- 1 267 H. P. Abendroth & Root, 150 lbs. pressure.
- 4 return tubular, 72"x18", 125 lbs. pressure.
- 1 return tubular, 60"x15", 100 lbs. pressure.
- 2 return tubular, 42"x14", 100 lbs. pressure.

ENGINES.

- 1 16x30x48 Hamilton Corliss.
- 1 13x20x45 Armstrong & Sims.
- 1 13x18x15 McIntosh & Seymour.
- 1 11x17x14 Harrisburg Ideal.
- 1 22x48 Hewes & Phillips Corliss.
- 1 16x36 Green Corliss.
- 1 14x28 Delamater Corliss.
- 1 10x30 Allis Corliss.
- 1 18x16 Ball & Wood.
- 1 18x18 Ridgeway McEwen.
- 1 18x24 Atlas automatic.
- 1 16x24 Atlas automatic.
- 1 13x21 Buckeye, tangye bed.
- 1 14x15 Erie City automatic.
- 1 13x12 Ideal automatic.
- 1 12x12 Armstrong & Sims.
- 1 9x9 New York Safety.
- 1 8x8 Climax automatic.

COMPRESSOR.

- 1 24 and 24x30 Rand Straightline type C, steam driven, 1320 ft. free air.

THOMPSON SON & CO.

114-118 Liberty St. NEW YORK CITY.

MENGEL'S MACHINERY EXCHANGE

15 H. P. Geyser Portable Boiler and Engine on wheels. 25 H. P. Portable Duvall on skids. 10 H. P. Baxter Engine and Boiler combined. 55 H. P. White & Middleton Gas or Gasoline Engine, 12" by 36". 60 H. P. Hamilton-Corliss Engine, directly connected to 25-ton Linde Ice Machine. 5 and 10-ton Vertical Compressors. 4 25 and 35 H. P. Horizontal Engines. Sharp's Collar and Cuff Ironer. Band Starcher and Ironer. 50 gal. Copper Starch Kettle. 60-light Dynamo. 25 110 volt Manhattan Arc Lights. Cylinder and Job Printing Presses. Paper Cutters. Complete Plants and Machinery of all kinds Bought, Sold and Exchanged. Nearly new 25 H. P. White & Middleton Marine Gasoline Engine.

Mengel's Mach'y Exchange, 12 E. Lombard St., Baltimore Md.

FOR SALE.

COTTON MILL MACHINERY.

- 24 Foss & Pevey Cards with Lickers-in. Steel Fillet Clothing.
 - 8 Foss & Pevey Cards. Steel Fillet Clothing. (Recently Clothed.)
 - 4 Railway Heads
 - 2 Slubbers, 46 Spindles each.
 - 6 Speeders, 56 Spindles each.
 - 10,000 Slubber and Speeder Bobbins.
- Above machinery in good condition and can be seen in operation. A great opportunity to fit up a mill at low cost on coarse yarns.
- Address R., care Manufacturers' Record.

FOR SALE.

- | | | |
|------------------|------------------------------|-------|
| BOILERS — | 80 h. p. Hor. Tubular..... | \$260 |
| | 250 " Watertube..... | 440 |
| ENGINES — | 30 " McIntosh & Seymour 100 | |
| | 15 " Gas Engine, "Otto"..... | 180 |
| | 60 " Westinghouse..... | 280 |
| | 125 " N. Y. Safety..... | 680 |
| | 175 " Corliss..... | 950 |
| DYNAMOS — | 120 lights Edison..... | 128 |
| | 150 " Onondaga..... | 148 |
| | 200 " Mather..... | 160 |
| | 270 " Edison..... | 190 |
| | 510 " Edison..... | 298 |
| | 1000 " Edison..... | 540 |

American Electric Supply & Mfg. Co.
27 Thames St., New York City.

FOR SALE.

Fifty Whitin Welman Top Flat Cards, with 40 tops 40 ins. wide. Cylinder 42 x40 ins. Doffer 40x18 ins. Floor space 8 ft. 3 ins. x5 ft. 2 ins., with collars. Production 125 lbs. per day. Some of these cards are only 3 years old, balance 8 years. They can be seen running. Also 150 sets Steel Clothing in extra good condition; 100 Doffers; 150 Mason Looms, 44"; 10 Ashworth Revolving Top Cards. For full information and price apply to

WM. J. DUNN,
Fall River, Mass.

Second-hand Dynamos, Motors and Electrical Appliances. All money savers. Repair anything. Have you a Dynamo or Motor for sale?

GUARANTEE ELECTRIC CO.

123-129 S. Clinton St. CHICAGO.

ENGINES—Compound.

- 2 24 & 44x48 Tandem Cooper Corliss.
- 1 20 & 36x48 Tandem Hamilton Corliss.
- 1 20 & 36x48 Tandem Fitchburg Corliss.
- 1 18 & 34x48 Tandem Cooper Corliss.
- 1 16 & 32x48 Tandem Cooper Corliss.
- 1 16 & 28x18 Tandem Erie Ball.
- 1 16 & 28x16 Cross Erie Ball.
- 1 16 & 26x17 Tandem McIntosh & Seymour.
- 1 15 & 25x16 Cross Erie Ball.
- 1 15 & 23x17 Tandem McIntosh & Seymour.

Simple.

- 1 36x72 Corliss, 50-ton wheel.
- 1 28x60 Allis, 1890 frame.
- 1 28x36 Philadelphia Corliss.
- 1 26x36 Hamilton Corliss.
- 1 24x48 Twin Hamilton Corliss.
- 1 22x42 Harris Corliss.
- 1 21x18 Armstrong & Sims.
- 1 18x48 Knowlson & Kelly Corliss.
- 1 18x48 Allis Corliss.
- 1 18x48 Armstrong & Sims.

Rossiter, MacGovern & Co., (Inc.)

Electrical and Steam Machinery.

Whitehall Bldg., 17 Battery Place, New York City.

24 State St., BOSTON, MASS.
Missouri Trust Bldg., ST. LOUIS, MO.

A SMALL AMOUNT

will buy

Pulverizing Machinery

Cement, Barytes, Talc, Foundry Facing, Etc.

We have three Cylindrical Pulverizers or Pebble Mills, made by the West Pulverizing Machine Co. These Mills will reduce your material cheaply and quickly.

They are New and Complete

With all parts.

FOR SALE BY

BAKER, STILLWELL and HART,
Birmingham, Ala.

Atlantic Works 4 side Timber Planer,
20"x14" capacity—Weight 17,000 lbs.

Worth \$2600—Price \$1200.

Used 1 year—\$300 worth extra knives.

G. L. BENNETT, 113 Liberty St., N. Y.

FOR SALE.

Davis Calyx Drill,

Class F, with appurtenances and 10 H. P. locomotive type Boiler on wheels, to run drill.

This drill is used for exploiting for minerals and for driven wells, and is very complete in all its appurtenances. It has been in use about ten months with best of care, and was new when purchased. Its capacity is guaranteed for 600 feet, but will bore deeper with sufficient drill rods. It cuts a 4 1/2" hole and 1" core; 300 feet of drill rods, 131 feet of 5" extra black pipe for casing. Drive head and shoe. Cost complete over \$1800. Will sell for \$800 f. o. b. cars Sylva, N. C.

R. L. MURRAY, Waynesville, N. C.

FOR SALE.

Several Hundred Tons of
1/4 inch

Open-Hearth Tank Plate

63 x 156-inch.

E. KEELER CO., Williamsport, Pa.

For Sale—Fertilizer Factory.

Located on the St. John's River, at Jacksonville, Fla. This property can be bought very cheaply, and experts say that with a small outlay of cash its capacity can be doubled. For information and terms apply to

WILLIAM W. GORDON, Jr.

Attorney for A. Cosmo Little, SAVANNAH, GA.

FOR SALE—MACHINERY—Second Hand Circular Saws good as new, from 6 to 60 inches. Let us know what size you wish to trade. One second hand Self-feed Boiler, one second hand Pony 80 w Mill, one second hand Double Saw Mill, one 30 H. P. Portable U Mill, one Knight's Pay Knife Grinder, one Pay Mortiser, one or two 8 ft. Self-feed Pumps, one 10 H. P. Emery Wheel Stand, one second hand Drift, one Double Shaper, one 34 one Pay Surface, one Self-feed Rip Saw, one Pay Variety Saw, one Engine Governor, one Variety Wood-worker, one 1000 lbs. Press, one 20 Hand Saw.



THE MILLER OIL & SUPPLY CO.
Indianapolis, Ind.

BOILERS.

- Four (4) 60"x16" R. T. (80 H. P.)
- One (1) 56"x14" R. T. (60 H. P.)
- One (1) 58"x13" Locomotive Portable (60 H. P.)
- One (1) 48"x12" R. T. (40 H. P.)
- One (1) 44"x14" R. T. (40 H. P.)
- One (1) 60"x7 1/2" Marine.
- One (1) 15 H. P. Portable on wheel

ENGINES.

- One (1) 2 1/2"x48" L. H. Harris Corliss (300 H. P.)
- One (1) 4"x24" Double Cyl. Automatic.
- One (1) 17 1/2"x20" Side Crank.
- One (1) 14"x24" Side Crank.
- One (1) 15"x36" Side Crank.
- One (1) 15"x34" Side Crank.
- One (1) 15"x24" Side Crank.
- One (1) 12"x28" Side Crank.
- One (1) 9"x12" Side Crank.
- One (1) 10 1/2"x15" Side Crank.
- One (1) 10"x16" Center Crank.
- One (1) 9"x12" Center Crank.
- One (1) 8"x12" Center Crank.
- One (1) 10"x12" Vertical Marine.

HOISTING ENGINES.

- One (1) 6"x8" Single Cyl., Single Drum (no boiler.)
- One (1) 6 1/2"x10" Double Cyl., Link Motion (no boiler.)
- One (1) 6 1/2"x8" Double Cyl., Double Drum (with boiler.)
- One (1) 6"x10" Single Cyl., Single Drum (no boiler.)
- One (1) 5"x7" Engine and Boiler.

HEATER.

- One (1) 50 H. P.

ROCK CRUSHER.

- One (1) 10"x16" Hoagland.

WELL BORING OUTFIT.

- One (1) 15 H. P. Complete Rig.

LOG HAUL-UP.

- One (1) Lane Rig Complete.

PUMPS.

We have a large assortment of second-hand steam pumps in good condition. Also a large stock of second-hand pipe, valves, fittings, shafting, boxes, hangers, pulleys, wheels and axles.

Write for detailed specifications and prices.

Cameron & Barkley Company,

Charleston, S. C.

FOR SALE.

- 2 25 H. P. and 2 50 H. P. balanced valve centre crank engines.
 - 1 12 H. P. and 2 15 H. P. locomotive boilers and engines on wheels.
 - 1 15 H. P. Peerless traction engine.
 - 1 10 H. P. locomotive boiler on wheels.
 - 1 90 H. P. locomotive boiler.
 - 2 New Era graders, with 25 H. P. traction engines.
- Earth handling machinery, dump cars, railway, mining and contractors' equipment of every description.
- If you want to buy or sell contractors' plant of any description, we can help you. Correspondence solicited.

CONTRACTORS EQUIPMENT CO.

Betz Building, Philadelphia, Pa.

FOR SALE.

Five Blowing Engines.

36" Steam Cylinder, 84" Air Cylinder, 54" Stroke.

Engines were built by Cuyahoga Engine Works and can be seen in operation at our plant at Columbus, Ohio. Can be delivered about Jan. 1st.

The Columbus Iron & Steel Co.

COLUMBUS, OHIO.

BARGAINS—CHEAP.

- One Deane Duplex Comp. Pump, 14x26x11x18.
- One 30x13 Blake Pattern Crusher, nearly new.
- Three Hoisting Engines. Rails, Locomotives.

L. E. KENNEDY & CO.

17 Broadway, New York City.

Do These Interest You?

- 1 20x30 Horizontal Engine, \$800.
- 1 8 1/2"x10 Single Drum Mining Engine, \$400.
- Other Hoisters, \$150 up.
- Boilers, 36x36—42x40.

CONTRACTORS SUPPLY CO.

Park Building, PITTSBURGH, PA.

FOR SALE.

75 K. W. direct connected set.
115 volts, excellent condition,

J. C. M. LUCAS,

22 Light Street, BALTIMORE.

FOR SALE.

Immediate Delivery.

AIR COMPRESSORS.

- Two Rand Straight Line, "Class C," 18"x18"x34", One Ingersoll-Sergeant, Class "G," Duplex, 20"x20 1/2"x24",
- One Norwalk (2 stage) 14"x14"x9 1/2"x16",
- Two Rand Duplex (3 stage) 16"x14"x8 1/2"x4 1/2"x12",
- One Rand Duplex Corliss, 20"x20"x36".

BOILERS.

- Four Babcock & Wilcox Water Tube, 208 h. p. each, shaking grates.
- Eight Horizontal Return Tubular, 66"x16",
- Three Horizontal Return Tubular, 72"x12",
- Four Horizontal Return Tubular, 72"x16",
- Three Horizontal Return Tubular, 60"x16",
- Nine Horizontal Return Tubular, 72"x18".

ENGINE.

- One 20"x40" Buckeye, girder frame, band wheel in half, 12"x31" face.

LOCOMOTIVES.

- 36" gauge Locomotives.
- Four H. K. Porter 9"x14", saddle tank.
- Two Vulcan 9"x14", saddle tank, built 1900.

RAILS.

- 200 tons 30-lb. steel relayers.
- 200 tons 35-lb. steel relayers.
- 500 tons 56-lb. steel relayers.

CARS.

- Eighty 80,000-lb. Ore Hopper Cars, made by Allison Mfg. Co.

PUMP.

- 1 Worthington Compound Duplex Condensing Pump, 25"x43"x17 1/2"x36", 20" suction and 18" discharge. Capacity, 3,000,000 gallons.

All of the above in A1 order and ready for immediate delivery.

We buy and sell Air Compressors, Engines, Locomotives, Rails, Cars, Bridges, Boilers, Hoisting Engines and Pumps, etc. Complete plants purchased.

BOILER STACK.

- 1000 feet of 34" Boiler Stack, 5-16" material. This stack is first-class in every respect and will be sold at a bargain.

CYLINDER BOILERS.

- 8 Boilers, 40" long x 34" diam., good for 100 lbs. steam pressure, without fixtures or fittings. For quick sale will be sold cheap.

A. V. KAISER & CO.

222 South Third St., PHILADELPHIA, PA.

FOR SALE.

Boilers.

- Two 70 H. P. Hor. Return Tubular. Two 65 H. P. Locomotive. One 25 H. P. Locomotive. One 25 H. P. Vertical. One 20 H. P. Vertical. One 10 H. P. Vertical.

Engines.

- One 7x8 Vertical. One 10x12 Horizontal. One 12x24 Horizontal. One 12x28 Horizontal. One 14x24 Horizontal. One 18x24 Horizontal. One 10x14 "Buckeye" Automatic. One 13x15 "Ide" Automatic. One 15x18 "Ide" Automatic. Two 10x12 "Ball" Automatic.
- Also a lot of Pumps, Hoisting Engines, Motors, Rails, Pipe, Wood Working Machinery, Shafting, Hangers, Wood and Iron Pulleys.

ALL AT BARGAINS.

Huntington Machinery & Supply Co.
WILKES-BARRE, PA.

FOR SALE.

ENGINES.

- 350 H. P. Corliss.
- 12x12 Armstrong & Sims Automatic.
- 60 H. P. Upright N. Y. Safety.
- 15 H. P. Portable Engine and Boiler.
- 160 H. P. Armstrong & Sims.
- 100 H. P. Boiler, 100 lbs.
- 40 H. P. Horizontal Tubular, 100 lbs.
- 15 H. P. Upright Boiler.

DYNAMOS.

- 2 Thompson & Houston, class D, 62 K. W., 500 volts, speed 900.

STONE CRUSHERS.

- 9x12 Brennan. No. 4 Gates.

STEAM PUMPS.

- 14x36x10 Duplex. 12x8x10 Steam.

5 ft. Sturtevant Ex. Blower with engine attached.

FRANK E. GORE, 206 Broadway, N. Y. City.

BOILERS!

Engines, Machinery in great variety at LOW PRICES.

Correspondence solicited by
FIDELITY MACHINE AND METAL COMPANY,
1406-22 Washington Ave., Phila.

Blower Bargains.

Special offer in Roots Second-Hand Blowers, all sizes up to No. 5.

Address H. M. PAPWORTH,
120 Liberty St., New York.

LATHES.

No. 72 14"x5' Lodge & Shipley.
No. 73 14"x5' Lodge & Shipley.
No. 49 20"x10' Taper, Lodge & Shipley.

THE LODGE & SHIPLEY MACHINE TOOL CO.

CINCINNATI, OHIO, U. S. A.

FANS.

Central station man's opportunity to increase the day load. We offer for immediate delivery, all f. o. b. Cincinnati, the following 125 cycle fans:

150 G. E. swivel and turn, 12 in., 104 volt., \$5.00 each.
150 Emerson solid, 12 in., 52 volt., \$3 each.
200 Westinghouse solid, 12 in., 52 volt., \$3.50 each.
100 G. E. swivel and turn, 12 in., 52 volt., \$4.00 each.

JOHN A. STEWART ELECTRIC CO.
420 Sycamore St., Cincinnati, Ohio.

SECOND-HAND TOOLS IN FINE WORKING ORDER.

16x6 Davis & Egan engine lathe, comp. rest.
18"x5' Hendey-Norton engine lathe, comp. rest.
21"x10' Lathe & Morse engine lathe, plain rest.
15"x5' Hendey shaper, 24" Hendey shaper, 30" Prentiss Bros. drill press, back geared, power feed.
70" Gang radial drill, 62" Hillis & Jones radial drill.
No. 16 Garvin plain milling machine with vertical spindle attach.
No. 2 1/2 Garvin Universal milling machine.
No. 3 Garvin screw machine, plain head.
No. 3 Pratt & Whitney screw machine, geared friction head.
No. 4 Warner & Swasey screw machine, friction head, wire feed, collets and tools.
2 1/2"x12" Garvin screw machine and tools.
17" automatic screw machine, Pratt & Whitney.
2 1/2" automatic screw machine, Pratt & Whitney.
No. 1 Diamond universal grinder.
34" Colburn boring and turning mill, with chuck.
No. 4 diamond face grinding machine. Underwood portable milling machine.
Photo and description on application

THE GARVIN MACHINE CO. Spring and Varick Sts., New York.

FOR SALE.

1 20x36x48 Cross Compound Corliss.....\$3250
1 18x42 Harris Corliss, overhauled..... 1100
1 14x48 Corliss..... 600
1 20x60 Corliss, first-class..... 1000
1 500 H. P. Berryman Heater..... 150
1 400 H. P. Knowles Comp. Jet Condenser... 250
STEAM PUMPS, HEATERS, TRAPS.
1000' 1" Pipe in three coils, 1/2 net price new.
4 36" Davidson Vent. Fans.....\$35 each
1 No. 4 Pedrick & Ayre Compressor, used three months, \$350.
1 MORSE WILLIAMS ELEVATOR.....\$125
1 WHITTIER ELEVATOR..... 125

F. H. DAVIS & CO.

53 State Street, BOSTON, MASS.

FOR SALE.

1 22x52 R. H. Watts Campbell Corliss Engine.
1 10x12 Ideal Automatic Engine.
1 10x7x10 Worthington Duplex Pump.
1 15 ton Road Roller for sale or rent.
1 Little Giant Steam Shovel.
1 10x7x10 Worthington Duplex Pump.
Iron Tanks, 500 to 1000 gallon capacity.

JAS. S. BRADEN, 26 Cortlandt St., New York.

FOR SALE.

1-54 in. x 12 ft. horizontal tubular boiler.
1-12x20 horizontal engine.
1-7 and 14x10 fore and aft marine engine.
6 steam pumps—all sizes.

E. J. CODD CO., Baltimore, Md.

FOR SALE.

One Second-hand "BERRYMAN" HEATER AND PURIFIER, in perfect condition and guaranteed good as new. Will sell cheap for cash.
Address M. F., care Mrs. Record, Baltimore, Md.

FOR SALE. Partial List Second-Hand Machines

18"x5' Pratt & Whitney, rise and fall rest, with taper.
14"x5' Putnam, rise and fall rest.
14"x5' Prentiss, rise and fall rest.
15"x5' Bialdell, rise and fall rest, with taper.
15"x5' Poeter, rise and fall rest.
15"x5' Prentiss, rise and fall rest, with taper.
15"x5' Pratt & Whitney, rise and fall rest, with taper.
16"x7' M. H. & C., plain rest.
16"x10' Fay & Scott, compound rest.
18"x5' Reed, plain.
18"x5' Lodge & Davis, compound rest and taper.
24"x10' No Name, incomplete.
26"x5' Betts Lathe, compound rest.
30"x5' Starr, plain.
36"x14' Betts Lathe, compound rest.
No. 3 B. & O. Turret.
No. 14 Garvin Special Forming Turret Lathe.
14"x5' Lodge & Barker Turret Lathe.
16"x5' Johnson Turret Lathe.
18"x5' Lodge & Davis Chucking Lathe.
Six-Spindle Miles, Bement & Co. Arch Bar Drill.
26" Blackford Upright Drill.
30" Barnes Upright Drill.
Three-Spindle Upright Sensitive Drill.
Three-Spindle Garvin Sensitive Drill.
24"x24"x6" Sellers Planer, one head.
12"x12"x10" Whitcomb Planer, two heads.
12"x12"x18" Betts Planer, one head.
16" Smith & Mills Shaper.
No. 2 Keyseat Milling Machine.
No. 2 Garvin Plain Milling Machine.
No. 1 B. & S. Universal Milling Machine.
No. 44 Garvin Plain Miller.
No. 3 Garvin Plain Miller.
2 No. 3 Garvin Plain Millers.
1 No. 44 Brainerd Plain Miller.
No. 4 Schlenker Double-Head Bolt Cutter.
2" Pratt & Whitney Cutting-Off Machine.
12" Lowell Machine Co.'s Slotter.
Double-Head Pratt & Whitney Horizontal Boring Mill.
Cold Saw, 19" Blade, Pump and Pan.
30" Springfield Knife Grinder.
Wells Bros. Cutter and Reamer Grinder.
Springfield Tool Grinder, 36" Wheel, with pump.
2 Speed Lathes.
435 H. P. Portable Boilers.
1 Blacksmith Bellows.
Also a complete line of new machines. Correspondence solicited.

Brown & Zortman Machinery Co.,
PITTSBURGH, PA.

2ND-HAND TOOLS.

Lathes.

18 in. x 8 ft. Field.
26 in. x 18 ft. Fitchburg, blocks.
27 x 14 Geo. Place, heavy.
28 x 19 ft. Fay & Scott.
17 Stewart Speed Lathes.
18 in. x 8 ft., comp. rest, Lowell.
Axle Lathes, Bement (3).

Planers.

21 in. x 4 ft. heavy, Leeds.
26 in. x 8 ft. L. W. Pond.
48 in. x 48 in. x 18 ft. Sellers.
2 heads.

Shapers.

16 in. Geared Western.
18 in. Ohio, crank.
32 in. Prentiss-Juengst.

Drills.

Cutting, 3 ft. arm, Radial.
Cutting, Boilermakers.

Screw Mchcs.

No. 80 Garvin, 1/2 in., with wire feed.
Garvin Hub Mch., 1/2 in. hole.

Write your requirements.

G. L. BENNETT, 113 Liberty St., New York.

FOR SALE.

7 1/2 H. P. Genl. Elec. Motor, 220 volts, fine condition.
30 H. P. Chaudler & Taylor automatic engine, fine condition.
25 H. P. Westinghouse vertical engine, fine condition.
8"x10" Valley automatic engine, New.
2, 5 and 7 1/2 H. P. New Olin gas and gasoline engines, etc.

LARGE LOT WOOD WORKING MACHINERY, IRON WORKING MACHINERY & STEAM PUMPS.

Horizontal and Vertical Boilers, All Sizes.
Large lot good second-hand leather belting, machinery tools and supplies for every branch of the mechanical trades.

WHAT HAVE YOU FOR SALE?

All kinds of machinery, engines, boilers, steam pumps, bought or exchanged.
Send for Machinery List No. 8.

J. D. MALLORY, Baltimore, Md.

We have FOR SALE at

CROWN POINT, N.Y.

1 Smoke Stack, 8' diameter, 130' high, self supporting.
3 Hartman Stoves, complete, 66"x16'.
3 Hartman Stoves, complete, 46"x15'.
1 2"x15" Farrell Stone Crusher.
16 Cylinder Boilers, 36"x41".
Air Tanks and Receivers from blowing engine.

HENRY A. HITNER'S SONS,

Huntingdon St. and Aramingo Ave., Philadelphia.

New Machinery for Sale

J. W. Cregar Agency,

The Bourse, Philadelphia, Pa.

One Ferracute Machine Co., SG No. 66 Press, made special, geared, 5 ft. 3 in. between frames, 1 1/2 in. stroke, weight 16,000 lbs. This machine is new and a special price will be made to move it quickly.

One (1) Philadelphia Machine Tool Co., No. 3 Double Crank Press with automatic positive clutch, heavily geared, 5 1/2 in. between frames, 1 1/2 in. stroke. Weight 4,000 lbs. The above press is new and specially low price will be made to move it promptly.

One (1) Perkins Punch and Shear Machine, 34 in. depth of throat, single ended, capacity to punch 1 in. hole in 1 in. iron, and with punch, die and shearing blades. Weight 11,500 lbs. Net Price, \$875, f. o. b. cars Philadelphia. This is a new machine and low price put on it to move it promptly.

Two (2) No. 6A Gorton Universal disc Grinders with 16 in. disc, all complete, \$270 each, f. o. b. Philadelphia. These machines are new and complete in every way.

24 in. x 12 ft. Draper Engine Lathe, 18 in. x 8 ft. Draper Engine Lathe, 32 in. x 10 ft. Walcott Engine Lathe, 15 in. x 6 ft. Walcott Engine Lathe, 24 in. x 12 ft. Davis Engine Lathe.

All the above tools are new and special cut price will be made to move them quickly.

J. W. CREGAR AGENCY,

Machinery Hall,

The Bourse, Philadelphia, Pa.

FOR SALE.

Drain or Culvert Pipe.

125 lengths of 30" Cast Iron Pipe, practically as good as new, at Charleston, S. C.

FRANK SAMUEL,

Harrison Building, PHILADELPHIA, PA.

Bargains in Second-Hand Direct Connected Units.

One 50 K. W. "Eddy" generator directly connected to 13"x12" "Ames" horizontal automatic engine. 400 amperes, 125 volts, 250 revolutions.
One 25 K. W. "Westinghouse" generator directly connected to 10"x12" "Ball" hor. automatic engine, 125 volts, 240 amperes, 300 revolutions.

L. F. SEYFERT'S SONS,

437-441 N. Third Street, PHILADELPHIA.

GREAT BARGAIN.

125 H. P. Westinghouse Standard Engine, guaranteed condition.
Will buy 50 light T. H. or Brush Arc generator.

J. W. KOHN & CO.

14 Merwin Street, CLEVELAND, O.

PULLEYS FOR SALE.

WOOD—54 in. to 38 in. diameter; 8 in. to 14 in. face.
CAST IRON—48 in. to 55 in. diameter; 6 in., 8 in. and 14 in. face.
STEEL RIM—36 in., 46 in. and 48 in. diameter; 6 in., 8 in. and 10 in. face.
Second-hand; in good condition; complete list on application.

ANTON J. BERGER,

988 N. Talman Ave., Chicago.

FOR SALE.

1 18" Turret Lathe.
1 18" Engine Lathe.
1 14" Engine Lathe.
1 12x14 Upright Engine.
1 12x14 Atlas Engine.
3 Gasoline Launches.
1 6 H. P. Marine Engine.

Let us have your requirements. We can fill them.
PATAPSCO MACHINE & SUPPLY CO.
Baltimore, Md.

FOR SALE.

1 15x22 Standard Gauge Locomotive with tender, wheel centers 44".
1 12x12x16 Class C Straight Line Rand Air Compressor.
Also have quite a number of New and Second-hand Hoisting Engines, Machine Tools, Lathes, Planers, etc., in stock.

CHAS. T. LEHMAN, Birmingham, Ala.

BARGAIN—\$2600 EACH.

3 500 H. P. 17 and 33 1/2 x 28 Condensing Lake Erie Engines, 138 R. P. M. Excellent condition.

CHARLES F. JOHNSON,

935 7 Ellicott Square, BUFFALO, N. Y.

BARGAINS FOR QUICK DELIVERY.

No. 2 Gates Crusher.
No. 3 Gates Crusher.
No. 5 Style B, Gates Crusher.
Double column Drop Hammer, cylinder 14"x30"; fine order.
Good Second-Hand Engines.
12-ton Kelly Roller, fine as new.
New Well Drilling Machine, cheap.
Marion AA Shovel, fine condition.

CONTRACTORS' SUPPLY & EQUIPMENT CO., 232 Fifth Avenue, CHICAGO.

These are O. K. and Ready to Ship.

No. 4 Nye Pump, \$140.
10x16 Atlas Automatic Engine, \$325.
12x18 Ide Automatic Engine, \$475.
11x90 Putnam Automatic Engine, \$675.
18x30 Box-bed Stationary Engine, \$650.
50 H. P. "Economic" Boiler, \$475.
125 H. P. Loco. Fire-box Boiler, \$625.
60x16 Return Tubular Boiler (4) @ \$400.
6x12 D. C. D. D. Hoist & Boiler, \$675.
30 Horse Lidgerwood, No. 72 1/2, \$625.
Lidgerwood Swinging Hoist, No. 203, \$235.
7x10 D. C. D. D. Friction Hoist, \$650.
Builders' Material Hoisting Rig, \$500.
Otis, 150 H. P. Tubular Heater, \$135.
Smith, No. 2, Gasoline Concrete Mixer, \$235.
8 Western Cars, 24-in. gauge, 1 1/2 yd., @ \$35.
10 No. 3 Austin Wheel Scrapers, @ \$25.
45-Ton Bucyrus, 1 1/2 yd. Steam Shovel, \$3050.
3 yard Marion Ditching Dredge, \$2000.
1/2 yard Steam Shovel, \$3000, in Ohio.
100 Drop bottom Gondolas, 40 M. @ \$250.
50 Rock Drills; 12 Air Compressors.
4 Vulcan Steam Pile Drivers.
Also, Derricks, Centrifugal Pumps, Buckeye Lamps, Locomotives, new and relay rail. Send for printed list of Bargains, just issued.

WILLIS SHAW,

171 La Salle St., CHICAGO.

FOR SALE.

BRIDGES.

1 50 ft. steel plate girder bridge, double track.
1 500 ft., 4 spans 125 ft. each, riveted pier bridge, double track, 24 ft. wide.
Viaduct joining pier 570 ft. double track.

CARS.

73 80,000 lb. hopper bottom ore cars.
100 tons 80-lb. Relaying Steel Rails.

HENRY A. HITNER'S SONS,

Aramingo Ave. and Huntingdon St.

PHILADELPHIA, PA.

FOR SALE.

Jackson Hand-Power Rock Drill, 6 ft. column and arm; set of sharpening tools for cross bits and 24 bits; used but 6 months; perfect condition. All complete; \$80. Address

WM. H. BATES, JR., Gardner, Mass.

FOR SALE.

1 18x42" Left Hand Harris Corliss Engine. Thoroughly Repaired. GUARANTEED good as new.

CLYDE MACHINE WORKS,

39th St. and Union Ave. CHICAGO, ILL.

New and Second-Hand Iron Tools and Woodworking Machinery

Corliss and Double Valve Engines for Trolley Roads and Electric Lighting Stations.

H. C. BAKER & CO.

114 N. 3d Street, Philadelphia, Pa.

WE SELL

Engines, Boilers, Pumps and Quarry Supplies, Concrete Mixers, Horse Rollers, Steam Drills, Air Compressors, Belting, Hose, and a full line of Contractors' Supplies.

CONTRACTORS' SUPPLY & EQUIPMENT CO., 232 Fifth Avenue, CHICAGO.

We own a choice lot of
RELAYING
25 lb. and 30 lb. STEEL RAILS
 and Splice Bars and Spikes for same. Also a
 number of Frogs, and Stub and Split
SWITCHES.

Light Steel Rails,
12, 16, 20, 25, 30 and 35 lbs. with splices.
Prompt delivery.
Maryland Rail Co.
CUMBERLAND, MD.

THE EDGAR S. LOW CO.
Empire Building, PITTSBURGH, PA.

JACKSONVILLE, Fla.

Contractors' Material**For Sale or Rent.**

LOCOMOTIVES—One 10x16, 36" gauge with tender.
One 10x12 standard gauge Baldwin dummy type.
Three 16x24 S. G. American type, with tenders.
One 36" gauge 5'x7 Byers geared.
One 12-ton Davenport, 36" new.
One Baldwin 36" gauge in good order.
One 8x16, 42" gauge Bailey saddle tank.

CARS—Both narrow and standard gauge, dumps and flats.

STEAM SHOVELS—several little Giants, Marions, etc., too numerous to mention.

TRACTION ENGINES—Three, from 15 to 25 horse power each.

PUMPS—One Worthington compound duplex steam, 12x18x10x10.

HOISTING ENGINES—about 7x10 d e d d with or without boiler, about 8x10 d d a c without boiler, male and female friction hoist, and others.

Stationary engines all sizes, crushers, boilers, etc.

HARPER MACHINERY CO.

Park Row Building, New York.
Yards and Shops, Newark, N. J.

**MANUFACTURERS****Light Steel Rails**

16-20-25-30-35 and 40 lbs. per yard.

Prompt shipment on all orders.

SCHONTHAL IRON & STEEL CO.

Mills and General Offices,

CUMBERLAND, MD.

RAILS—LOCOMOTIVES.

400 tons 35 and 40-lb. steel relay rails.
Locomotives—Narrow and standard gauge. 50 locomotives on hand.

Southern Iron and Equipment Co.

ATLANTA, GA.

40-Pound Relay Steel Rail.

200 tons for sale cheap.

WALTER A. ZELNICKER SUPPLY CO.

Department M. In St. Louis.

Shall we send you our Daily Rail and Equipment Bulletin?

FOR SALE.**NEW STEEL RAILS.**

12, 16, 20, 30, 35 and 40 lbs., with splice bars, bolts and spikes. Immediate shipment from stock.

JOHN J. HANEL & CO.

House Building. PITTSBURGH, PA.

FOR SALE—RAILS.

For immediate shipment from stock, 8, 12, 16, 20, 30, 40, 70, 75, 80 and 85-lb. New Rails. Also 20, 25, 30, 40, 50, 55 and 60-lb. Relayers, for prompt shipment. Cut Rails a Specialty.

RICHARDSON & CO., Inc.

200 Ninth Street, PITTSBURGH, PA.

FOR SALE.

1 9x14 Locomotive, 36" gauge.
9 Chicago Pneumatic Riveting Hammers.
3 Philadelphia Pneumatic Riveting Hammers.
1 125 H.P. return tubular Boiler, 125 lbs. pressure.
1 Air Compressor, 14-16x18, high pressure.

J. C. Saxton, 18 Broadway, New York City, N.Y.

FOR SALE.

Several Narrow Gauge Engines 10 to 20 tons; also standard from 40 to 60 tons. 1 16x24 Switcher in splendid condition. Stationary Boilers and Engines. 1 Perkins Shingle Machine as good as new. Agent for the Russell Wheel and Foundry Co. Cars. Also the Parker Steam Skidder.

J. H. MACLEARY & CO.

Suffolk, Va.

RAILS.

LIGHT SECTIONS, 8 TO 40 POUND.

Special Price to Dealers.

UNION RAIL COMPANY,

Farmers Bank Building, PITTSBURGH.

For Sale—Locomotives and Rails.

One 30x24 Baldwin Consolidation.
One 19x24 Dickson American type.
One 18x24 Dickson Mogul.
Three 17x22 Dickson Six-wheel Switchers.
One 15x22 McQueen American type. A bargain.
One 12x22 Dickson Four-wheel Saddle Tank.
One 12x16 Baldwin Forney type.
One 9x12 Porter Four-wheel.
All of the above standard gauge.

In 3 ft. Gauge we have:

One 12x16 Mason Forney type.
One 8x16 Porter Four-wheel Saddle Tank.
One 8x12 Shay Geared, built in 1896, (in South Carolina).
One 7x12 Baldwin Four-wheel Saddle Tank.
One 6x10 Porter Four-wheel Saddle Tank.
Also New and Relaying Rails of all weights.

BIRMINGHAM RAIL & LOCOMOTIVE CO., Birmingham, Ala.

N. Y. Elevated R. R. LOCOMOTIVES

Ready for Immediate Delivery.
Excellent Condition.

4' 8 1/2" Gauge, Forney Type, Cylinders 11"x14," 11"x16," 12"x16."

Suitable for Logging Roads, Contractors, Switching, &c.

BENJAMIN WATSON,

(Coffee Exchange Bldg.)

66 to 70 Beaver Street, N. Y. CITY.

Steel Rails, Cars, Locomotives, R. R. Supplies.

FOR SALE.

300 tons 60 1/2-lb. steel relaying rails with angle bars, Alabama and Georgia delivery.

900 tons 70-lb. steel relaying rails with angle bars, Ohio delivery.

500 tons 48-lb. steel relaying rails with angle bars, Ohio delivery.

Second-hand locomotives, coaches, steam shovels, and other railway and contracting material.

THE ISAAC JOSEPH IRON CO.

525-531 Hunt St., Cincinnati, Ohio

522-524 Monadnock Block, Chicago, Ills

LOCOMOTIVES.

50-ton Freight and Switch Engines for prompt delivery.

RAILS AND CARS.

MAY & SPALDING,

ATLANTA, GA.

R. S. ARMSTRONG & BRO.

ATLANTA, GA.

IRON BROKERS,

And dealers in New and Second-hand Machinery. Also carry in stock Hoisting Outfits and Light Section Rail for contractors' use.

NEW STEEL RAILS.

We have a large quantity of steel, A. S. C. E. section, various weights, with or without fastenings, for immediate or future delivery. Also have "seconds" for sale.

O. W. DAVIS & CO., 68 Wall St., New York City.

WANTED.

To purchase or lease for a term of years 500 standard gauge coal cars in good condition for immediate use.

Kelley's Creek & Northwestern R. R. Cedar Grove, W. Va.

2 yd. Bucyrus, first-class condition.
1 1/2 yd. L. G. Crane Trac. Shovel, 2 mos.
1 1/2 yd. L. G. Spec. Trac. Shovel, 2 weeks.
45-ton Vul. Giant D Spec. New. Last Dec.
New Era Sr. Steel Level Grader, 3 mos.
65 1-way 3-yd. Bloomsby Dump Cars, 3 mos.
32 side & rotary 1 1/2 yd. W. Dump Cars, 1 wk.
4 miles nearly new 50-lb. Angle Joints & Frogs

THE MALES CO.

256 Broadway, NEW YORK.

713 Traction Bldg., CINCINNATI, O.

RAILS.

We have for sale 250 tons of 35-pound choice Relaying Steel Rails, and can ship promptly from here.

STRINGFELLOW & WEBSTER, Richmond, Va.

FOR SALE.**New Steel Tee Rails**

60 to 80 lb. A. S. C. E. section.

Delivery guaranteed.

RAILWAYS BUILT AND FINANCED.

C. H. RUTTER, Easton, Penna.

NEW RAILS.

12,500 tons New Steel T Rails, 60, 70, or 80 lbs. per yard. July and August delivery.

Railroad Construction.

Steam and Electric Roads
Built and Financed.

JUSTICE COX, JR., & CO., LIMITED,

552-554 Bullitt Bldg., Philadelphia.

156-158 Broadway, New York City.

STEEL RAILS.

NEW AND RELAYING AND ALL ACCESSORIES.

Frogs, Switches, Crossings, Etc.

GEORGE H. CAREY,

1 Broadway. NEW YORK.

J. E. FRANKS

SAVANNAH, GA.

RAILS, CARS and LOCOMOTIVES, FROGS, SWITCHES, Etc.

FOR SALE.

Four (4) 18"x22" Cylinder Baldwin, ten-wheel Freight Standard Gauge Locomotives, weight about 42 tons; six drivers, 50" diameter; separate eight-wheel tender.

One (1) 14"x22" Cylinder, Baldwin six-wheel Locomotive (four drivers 50" diameter, pony truck in front, with separate eight-wheel tender.

Twenty (20) Flat Cars, 30' long, 20 tons, capacity, Diamond Trucks, M. C. B. Automatic Couplers, hand brakes.

Twelve (12) Coaches, 51' over all; carry 54 passengers; good coaches; cheap.

Two (2) Baggage Cars, same length; carry 28 passengers; all equipped with Westinghouse Air Brakes.

NEW YORK EQUIPMENT COMPANY,

18 Broadway (Room 526), New York.

Patapsco Machine & Supply Co.

210-212 Patterson St.—Baltimore, Md.

MANUFACTURERS OF AND DEALERS IN

**Brass Hardware and Specialties,
Railroad, Steamboat and Contractors' Supplies.
Second-Hand Machinery Bought and Sold.**

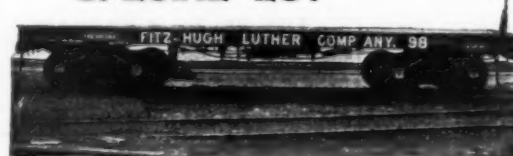
2 Little Giant Steam Shovels, \$2500.00 each, Pittsburg

1 Little Giant Steam Shovel, \$1800.00, Pittsburg

Four 9x14 36" gauge Porter Locomotives, almost new, \$2500.00 each, Stewart, Pa., P. R. R.

Booth & Flinn, Limited.

Pittsburg, Pa.

SPECIAL LOT

Excellent Condition

Immediate Delivery

LOCOMOTIVES

All Types and Weight

COACHES

Excellent Condition

CARS

Of All Description

Very Attractive Prices

FITZ-HUGH, LUTHER CO.

(Successors to Fitz-Hugh & Co.)

141 Broadway, NEW YORK.

Main Office—Monadnock Block, CHICAGO.

**RELAYING
56 and 60-lb.
RAILS.**

With heavy angle splice bars

An unusually fine lot of relayers. Quick shipment.

HENRY LEVIS & CO.

Philadelphia, Penna.



SOLE MANUFACTURERS OF FRED G. WEIR'S
IMPROVED RIGID & SPRING FROGS, CROSSINGS
SINGLE- & THREE THROW SPLIT SWITCHES,
FIXED & AUTOMATIC SWITCH STANDS, STEEL
DIE FORMED RAIL BRACES, SWITCH FIXTURES, ETC.

CABLE & ELECTRIC
TRACK WORK
FROGS, SWITCHES,
CROSSINGS, CURVES,
RAIL CHAIRS
ETC.

ELKHART FROG & CROSSING WORKS, Elkhart, Ind.

FROGS, SWITCHES, CROSSINGS, STANDS, ETC.

THE AMERICAN FROG & SWITCH CO., Hamilton, O.

FROGS, SWITCHES, SWITCH STANDS, RAIL BRACES.

FOR SALE.

STANDARD GAUGE PRIVATE HORSE OR STOCK CAR, adjustable stalls for carrying sixteen heads, complete in every detail, in first-class condition. BALDWIN STANDARD GAUGE DUMMY LOC MOTIVE, 9x12. Has been thoroughly overhauled and put in first-class condition.

Both of the above will be sold at a low price.

POULTERER & CO.

410 Builit Building. PHILADELPHIA, PA.

FOR SALE.

17 NEW 36" gauge 30,000 lbs. capacity

Flat Cars

For Prompt Shipment.

Kilby Locomotive & Machine Works,
ANNISTON, ALA.

Alabama Frog & Switch Co.

ANNISTON, ALA.

Manufacturers of

Railroad Crossings, Frogs,
Switches, Switch Stands, Rail Braces, Etc.

FOR SALE.

1 Locomotive, 36" gauge, 11x16, 15-ton capacity.
3 Box Cars, 54' long, 60,000 lbs. capacity. 30 Box Cars, 36' long, 40,000 lbs. capacity. 200 tons 56 lb. Steel Relays. 150 tons 60-lb. Steel Relays. 50 tons 53-lb. Steel Relays. Also New Rails, 8' to 40 lbs.

L. WOLF & BRO.,

50-51-52 Mitchell Bldg., CINCINNATI, OHIO.

ST. LOUIS' LARGEST SCRAP
IRON HOUSE.

Cohen-Schwartz Rail and Steel Co.

Head Office and Plant: Main & North Market Sts.
Branch Office and Yards: Foot of Mound St.

ST. LOUIS, MO.

Correspondence Solicited.

**Steel Rails, Coal, Coke, Pipe,
Structural Steel,
Merchant Iron and Steel**

Your orders solicited for any material produced
in Pittsburgh District.

EDGAR M. MOORE & CO.

PURCHASING AGENTS.

914 Farmers Bank Bldg., Pittsburgh, Pa.

NEW LIGHT STEEL RAILS.

12 lb. to 40 lb. per yard and Splices.
New Heavy Sections to 80 lb.
Narrow Gauge Railway Equipment.
Cars, Locomotives, Switches, etc.

WONHAM & MAGOR,

Columbia Building, NEW YORK.

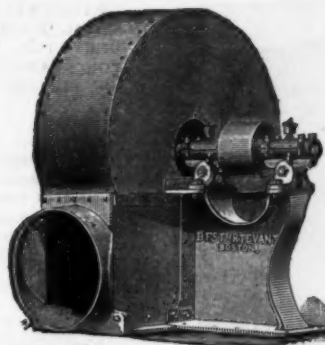
THE HENRY WALKER CO.

NORFOLK, VA.

Chandler & Taylor Co.'s Automatic
Cut-off and Throttling Steam Engines,
Boilers and Saw Mill Machinery, Lodge
and Shipley Lathes, Bickford Radial
Drills, Cincinnati Shapers, Cincinnati
Planers, Cincinnati Machine Tools,
Vertical Drills, Cincinnati Milling Ma-
chines. Also high-class Wood-working
Machinery, Pumping Machinery, Pneu-
matic Machinery.

Sturtevant Exhausters

Reduce the Cost of Conveying Light Materials.



The shells are of steel plate of such thickness as to withstand the abrading action of the material. A cast-iron support attached to the side of the shell carries the continuous oiling boxes with the shaft and pulley, and sustains the entire strain. The fan wheel is overhung upon the end of the shaft, thus leaving the inlet entirely unobstructed for the free passage of the material to be handled. They are suitable for conveying chips, shavings, sawdust, wood pulp, tan, etc. Special fans are built for conveying wool, cotton, jute and similar fibrous materials.

B. F. STURTEVANT CO., Boston, Mass.

New York. Philadelphia. Chicago. London. 192

STRONG and RELIABLE

is the light when the source is

A "HAM" LANTERN or LAMP**C. T. HAM MFG. CO.**

Manufacturers of Tubular Lanterns, Street Lamps, Contractors' Lanterns, Mill Lanterns, etc., etc., etc.

We sell to the jobbing trade only.

ROCHESTER, N. Y.

**Signs of Good Sand Paper,
THE BULL AND BEAR.**

In Use More Than Twenty-Five Years.

**Emery, Garnet and Flint Paper
and Emery Cloth.**

GLUE, CURLED HAIR AND HAIR FELTING.

BAEDER, ADAMSON & CO., 230 Market Street, Philadelphia. 148 Milk Street, Boston.
67 Beekman Street, New York. 182 Lake Street, Chicago.

SAVANNAH, GA., October 27, 1902.

Berry Hill Mineral Springs Co.,

Culpeper, Virginia.

I take great pleasure in testifying to the efficacy of your mineral water. I think it is just the water for our Southern people. I offered one of your little books to an eminent doctor of this city, that he might see the analysis. He replied: "Don't wish to read it, saw it tried with success on a doctor whose bowels had bid defiance to every prescription that we could think of; that is all the testimonial I want."

JOHN TALIAFERRO,

Principal Savannah Academy, Savannah, Ga.

Nickel Plating Outfits.

POLISHING MACHINERY.
CHEMICALS.
DYNAMOS.

THE HANSON & VAN WINKLE CO.
CHICAGO. NEWARK, N. J.
ADDRESS DEPARTMENT W

BALLAST CARS

250 Center Dump IMMEDIATE DELIVERY.
100 Side Dump

Inspection Chicago.

A full line of
Equipment.

F. M. HICKS, Chicago.

The Diamond State Steel Co.

DIAMOND POINT SPIKE.

SPECIALTIES.

Diamond Point Spikes (Patented). Best for soft wood ties.
Crescent Point Spikes (Patented). Best for hard wood ties.
Diamond Double Neck and P. R. R. Standard Spikes, with
rolled points, for either hard or soft ties.
Diamond Tie Plates (Patented).
Diamond Rail Joint (Patented).
Churchill Joint (Patented).
Diamond Grip Thread Track Bolts.
Track Bolts with cut and cold rolled thread.



CRESCENT POINT SPIKE.

ALSO MANUFACTURERS OF

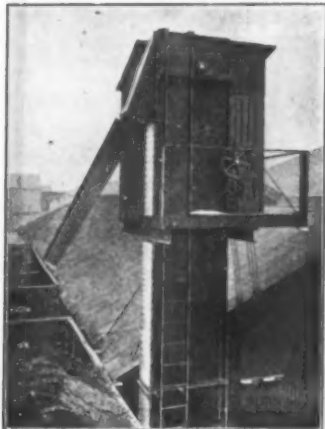
Pressed Point Railroad and Boat Spikes of all sizes, Plain and Angle Joints of iron, soft and high carbon Open Hearth steel, Merchant Bar Iron and Steel, Angles and Channels, Horse and Mule Shoes, Rivets, Machine Bolts, Etc.

Main Office and Works, Wilmington, Del.

Philadelphia Office - No. 503 Real Estate Trust Bldg.

New York Office - No. 29 Broadway.

Chicago Office - No. 934 Monadnock Block.

**LINK-BELT ELEVATORS.
CONVEYORS**

HEAD OF SELF-CONTAINED,
STEEL ENCASED ASHES
ELEVATOR, INSTALLED
FOR SPANG, CHALFANT &
CO., PITTSBURG.

This installation has proven
so satisfactory and so very eco-
nomical of time and labor, that
we have recently received an
order to furnish and install a
duplicate machine for the same
company.

"We do not want your first
contract if we cannot so sat-
isfy you as to warrant your
continued confidence and
orders."

LINK-BELT ENGINEERING CO.

NICETOWN, PHILADELPHIA.

New York, 49 Dey St. Pittsburg, Park Bldg. Savannah, Sorrel Bldg.
Chicago, Link-Belt Mch. Co.

THE MORSE ELEVATOR,

with proper care, will
last a generation.

The Pennsylvania Steel Company, Steelton, Pa.,
bought a Morse Elevator in 1884. They write
us that they have taken this elevator down and
are going to re-erect it in another building.

Morse, Williams & Company,
PHILADELPHIA.

HOOPES & TOWNSEND CO.

Philadelphia, Pa.

MAKE RIVETS

IN SOLID DIES.

No. 9 x 1/4 in. to 1 1/2 x 42 in.

THE J. W. REEDY ELEVATOR MFG. CO.

OVER
18,000 IN
OPERATION
THROUGHOUT
THE WORLD

PASSENGER AND FREIGHT
ELEVATORS

83-85-87-89-91 ILLINOIS STREET,
120-122-124-126 INDIANA STREET,
CHICAGO.

ELECTRIC
STEAM
HYDRAULIC
BELT
HAND

**CRANES
ELECTRIC
CRANES
HAND
CRANES
JIB**

For Every Service.

**McClave,
Hamilton & Co.**

85-89 Liberty St.,
NEW YORK, N. Y.

**BATES'
Hand Elevators.**

30,000 in use.
60 years in the Elevator business.

JAMES BATES' SONS,
BALTIMORE, MD.

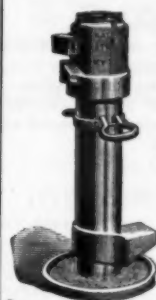


90% of all the Buckets used
in the construction of
the N. Y. Rapid Transit
Subway are manufactur-
ed by the

**G. L.
Stuebner
IRON WORKS,**

167-177 E. 34. St., Long
Island City, N. Y.

Catalogue No. 444 gives full information of
Buckets, Narrow Gauge Railways, Cars, etc., for
every purpose.



**Built
Wisely
and
Well.**

**Watson - Stillman
Hydraulic Jacks**

from first to last are care-
fully constructed. We know
that it's a question of rolla-
bility and that when a Jack
is pressed into service it
must not fail. Failure may
mean damages to life or
property.

If you were to read over
our Jack Catalog you would
know why Watson-Stillman
Jacks will not fail when put
to test.

Catalog sent on request.

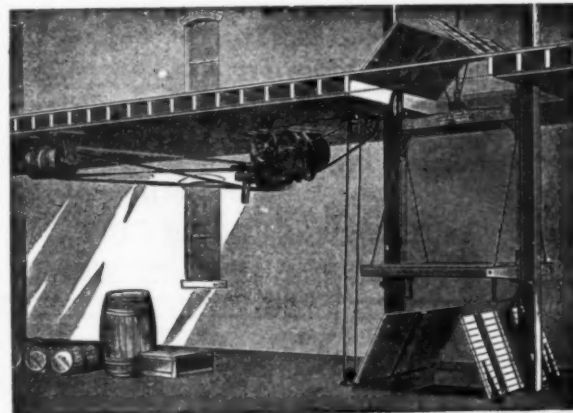
Watson-Stillman Co.

201-11 E. 43d St., NEW YORK.
453 The Rookery, CHICAGO.

Freight Elevators

FOR
**Hand, Belt and
Electric Power.**

PARKHURST BROS. & CO., Indianapolis, Ind.



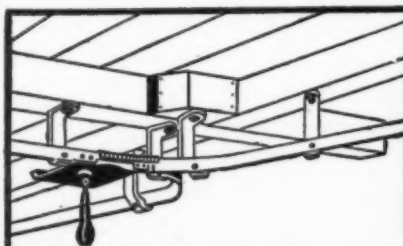
INDEPENDENT OF
A TRUST

**Belt
Power
Elevator**

COMPLETE
WITH OUR NEW
"BELT-POWER
WINDING
APPARATUS"

They can be built with any size platform and to lift almost any load. Automatic hatch doors are
provided for each floor when desired. Write for Illustrated Catalogue.

PARK MANUFACTURING CO., CHARLOTTE, N. C.



2 Track Plate Switch

Moyer's

Overhead Tramrail Systems suc-
cessfully used in Machine Shops,
Foundries, Mills, Factories, Pack-
ing Houses, etc.

Handles any sort of bulky packages
quickly, safely and economically.
Confer with us and we will cheerfully
show you how it will save its cost in
a few months.

New illustrated catalogue sent free.

J. W. Moyer & Co.

1733 Howard Street, Philadelphia, Pa.

MARYLAND FOUNDRY & MACHINE CO.

BALTIMORE, MD.

Manufacturers of Passenger and Freight

ELEVATORS.

POWER
TRANSMISSION
APPLIANCES

TRAVELING
AND JIB

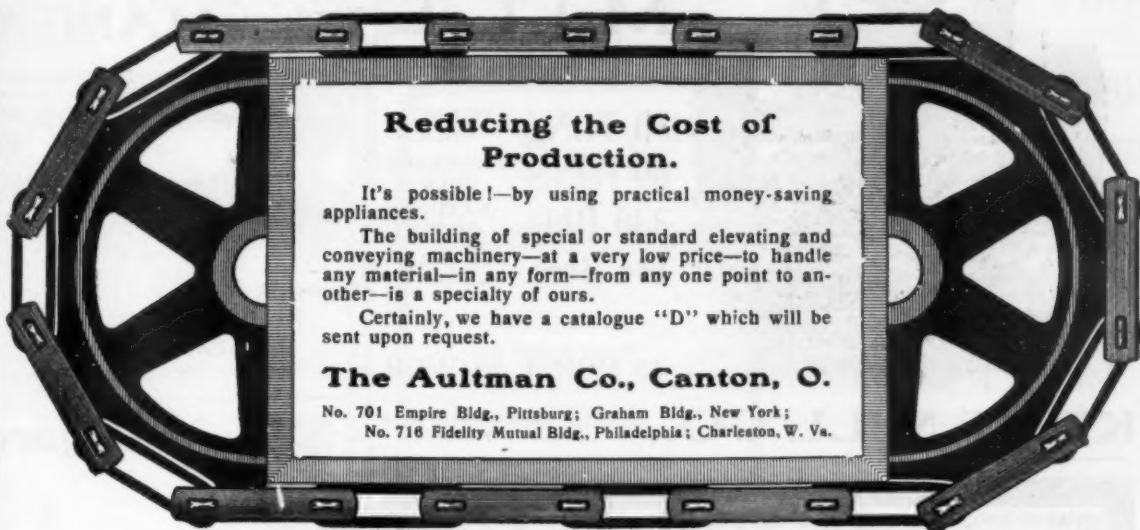
CRANES

THE
CASE MFG. COMPANY,
COLUMBUS, OHIO.



**Robins Belt
Conveyors**

Robins Conveying Belt Co.
19-22 Park Row, N. Y. City.



Reducing the Cost of Production.

It's possible!—by using practical money-saving appliances.

The building of special or standard elevating and conveying machinery—at a very low price—to handle any material—in any form—from any one point to another—is a specialty of ours.

Certainly, we have a catalogue "D" which will be sent upon request.

The Aultman Co., Canton, O.

No. 701 Empire Bldg., Pittsburg; Graham Bldg., New York;
No. 716 Fidelity Mutual Bldg., Philadelphia; Charleston, W. Va.

FREIGHT ELEVATORS,

Hand and Belt Power.

POWER HOGSHEAD SCREWS.

THE J. B. WESTBROOKS FOUNDRY
AND MACHINE CO.

DANVILLE, VIRGINIA.

General Founders and Machinists.



That name on elevators
means Safety, Strength
and Economy.
FAUNT LE ROY & COMPANY
ELEVATOR BUILDERS
BALTIMORE, MD.
WRITE FOR NEW CATALOGUE.

Dearborn Junior Typewriter Table Cabinet.

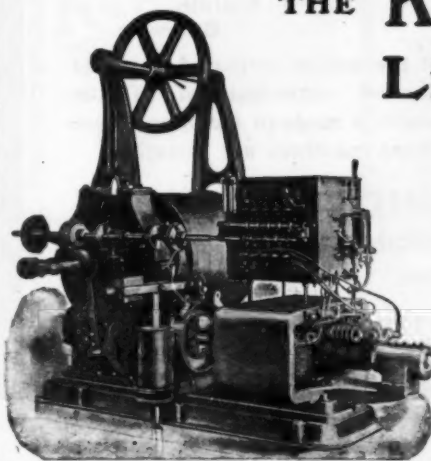


\$12.00
Solid Gold-
en Oak, 42
ins. long, 24
ins. deep. Guaranteed
to be the
most com-
plete Type-
writer Table
CABINET
ever sold at
the price.
Attachment
for holding
note book
effective
and invalu-
able. Shipped
to re-
sponsible parties on approval for \$12.00, freight
prepaid east of the Rocky Mountains. What more
can we offer? Write for catalogue of Dearborn
Typewriter Cabinets.

DEARBORN DESK COMPANY,

MEMS. OF TYPEWRITER CABINETS EXCLUSIVELY.
1921 First Ave., Birmingham, Ala.
200 Monroe Street, Chicago, Ill.

THE Kinkade & Liggett co.



Passenger
and
Freight

ELEVATORS

COLUMBUS,
OHIO.

ELEVATORS

Passenger and Freight

Hydraulic,
Electric,
Steam,
Belt Power,
Hand Power.

The Louisville Elevator Co.,

Louisville, Ky.

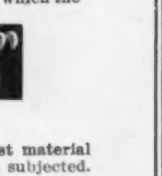
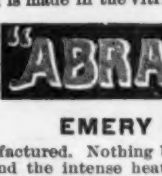
HAND
POWER **ELEVATORS**

CAPACITY 500 TO 2000 LBS.
CATALOGUE FREE.
J. G. SPEIDEL, READING, PA.

THE HAVEN ELEVATOR CO.

High Service Elevators, Passenger, Freight, Hydraulic
Electric, Belt and Hand Power. Write for Estimates

CINCINNATI, O.



A THOROUGH TEST OF
material is made in the vitrified process by which the

"ABRASIVE"

EMERY WHEEL

is manufactured. Nothing but the very best material
will stand the intense heat to which it is subjected.
That's why we're able to guarantee them to cut as fast
as any emery wheel made.

ABRASIVE MATERIAL CO.

PHILADA., PA.

THE MONARCH Emery and Corundum Wheel Company,

Manufacturers of

EMERY and CORUNDUM WHEELS.

The Greatest Saw Gummer and Knife Grinder Wheel in the World.

Factory and Main Office: 508-514 Liberty St., Camden, N. J., U. S. A.

Emery Wheels

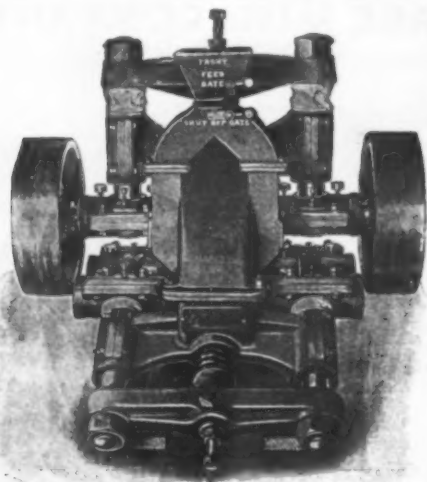
Will Run Wet or Dry.

CORUNDUM WHEELS.

Polishers and Machinists' Supplies, Rub Stones,
Emery Wheel Machinery, and Diamond Tools.

Vitrified Wheel Co.,

Westfield, Mass.



KENT MILL

GRINDS

50 TONS PEBBLE ROCK
60 TONS TENNESSEE ROCK
330 Bbls. NATURAL CEMENT
144 Bbls. PORTLAND CEMENT

EVERY 10 HOURS.

25 HORSE POWER

KENT MILL CO., 170 Broadway, NEW YORK.

THE LEADERS:

Davidson
Tubemills.

Smidth
Ballmills.

50%

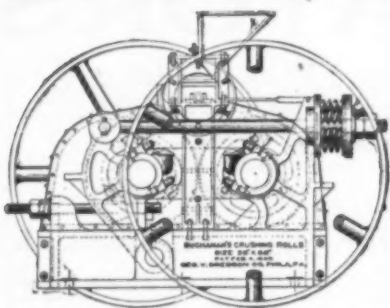
of the entire output of Portland Cement manufactured in the world is made in factories where these machines are installed.

F. L. SMIDTH & CO.
ENGINEERS,

66 Maiden Lane, Cor. William Street,
COPENHAGEN,
Vestergade 29.

NEW YORK.
LONDON,
9 Bridge St., S. W.

Buchanan's Crushing Rolls.



Drawing of 36"x22" Rolls, weight complete 37,000 lbs. Hammered Steel Shaft, 9" in bearings, 11 in. center. Interchangeable phosphor bronze bearings, 9"x22 1/2". Crushing shells, 4 1/2" thick of open hearth or manganese steel. Automatic continuous feed and dust covers for dry crushing.

GEO. V. CRESSON CO.,
Philadelphia and New York.

Our Roll are strictly HIGH GRADE. All sizes from 18" up to 60". Send for Catalogues on Buchanan's Ore Breakers and Magnetic Separators.

Power Transmitting Machinery.

C. G. BUCHANAN,
Consulting Engineer.

Department of
Crushing and Concentrating
Machinery.

141 Liberty Street,
NEW YORK, U. S. A.

Austin Gyratory Crushers



Technically and mechanically without a fault.

Least liable to get out of repair and most economical in consumption of power.

Made in nine sizes.

In general use everywhere.

Write for the handsomest Crusher catalogue ever issued.

Also Dump Cars and Contractors' Machinery.

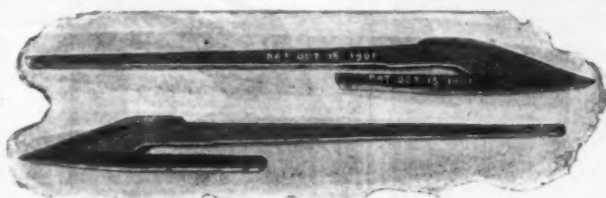
Austin Mfg. Co.
CHICAGO

BRANCH OFFICES: NEW YORK PITTSBURG ATLANTA ST. LOUIS

TIME, LABOR, POWER, MONEY SAVED.

Patented **TEETH** with Replaceable Shoes of

Hard, Tough **MANGANESE STEEL**



Send for Circular or Catalogue of other Castings.

Long Wear

No Breakage

All Sizes. Any Shape or Style.

Always Sharp

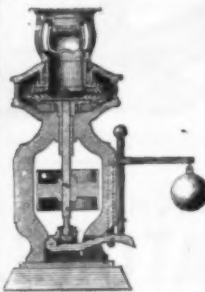
Easy to Renew

TAYLOR IRON & STEEL CO.

High Bridge, N. J.

Sole Manufacturers.

Bogardus Universal Eccentric Mill.



Sectional view No. 2 Mill.

This mill has already attained the reputation of being the best mill in the world for general grinding. Will grind five times as much as any mill of same size.

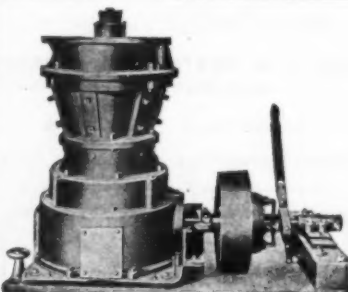
ECONOMICAL, DURABLE, SIMPLE. Any boy can attend same.

Catalogue and price list sent on application.

MANUFACTURED SOLELY BY

J. S. & G. F. SIMPSON,

28 Rodney Street, Brooklyn, N. Y.

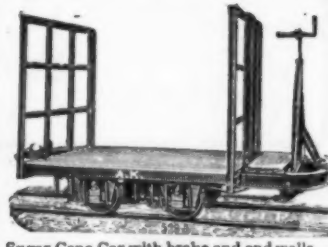


Pat. Applied For.
ROTARY FINE CRUSHER.

Crushes **7 to 15** Tons PER HOUR
to wheat size.

For finishing in Emery Mills or other grinding machines. Unequalled for Phosphate, Plaster, Limestone, Gypsum, etc. Send for circular.

STURTEVANT MILL CO.,
116 Clayton Street, BOSTON, MASS.



Sugar Cane Car with brake and end walls.

COMPLETE INDUSTRIAL RAILWAYS

Equipped, Planned and Built for
Factories, Plantations, Quarries, Mines,
Contractors, Etc.

CARS OF EVERY DESCRIPTION,
FOR EVERY PURPOSE.

Rails, Switches, Turntables, Etc., always in stock.

ARTHUR KOPPEL,

Manuf. of Narrow Gauge Railway Materials.
(Dept. K), 66-68 Broad Street,
Write for catalogue No. 25. NEW YORK.

CONTINENTAL CAR and EQUIPMENT CO.



17 Battery Place,
NEW YORK CITY.

Industrial and
Railway
Push Cars.

BUILDERS OF Logging, Railway, Freight, Cane and other Cars.

THE THEW AUTOMATIC SHOVEL COMPANY,

Write for Illustrated
Catalogue of
Shovels and Excavators.



LORAIN, OHIO.

SHOOK & FLETCHER,
Gen'l Southern Agents, BIRMINGHAM, ALA

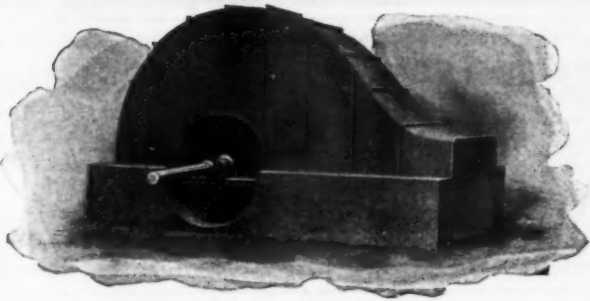
**STEAM SHOVELS FOR DOCKS
AND RAILWAY TERMINALS.**

Only one operator required.
Shovel works in complete circle.
Dipper moves horizontally.
Can be used as locomotive crane.



PEACOCK'S IRON WORKS, SELMA, ALA.

Manufacturers of PLAIN AND AUTOMATIC SELF-OILING
TRAM CAR WHEELS, AXLES, CAR IRONS and CARS
 OF ALL SIZES AND KINDS. COAL AND ORE MINING CARS OF EVERY KIND.



The Champion Mine Ventilator

Is a blower or exhauster as desired

COMPACT EFFICIENT

Sullivan Machinery Co.

135 Adams St., CHICAGO

Rand Compressors

ARE
 SIMPLE,
 COMPACT,
 EFFICIENT,
 DURABLE.

WRITE FOR CATALOG.

**Rand
 Drill
 Company**

128
 Broadway
 New York

If you wish to keep posted on the progress of the South, read the Manufacturers' Record. Price \$4 a year.

SCIENTIFIC ATTRITION MILLS

For Cotton Seed Crushers and Millers.

MADE BY US IN OUR OWN FACTORY

For The Past Twenty Years.

THE FOOS MFG. CO.

SPRINGFIELD, O.

THE GRIFFIN MILL

IS NOW USED **50** OF THE
 BY OVER LARGEST

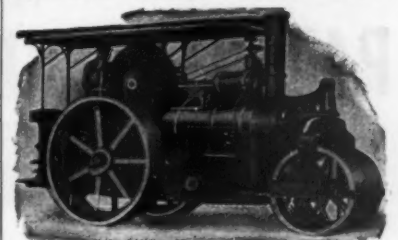
Portland Cement Manufacturers
 in the world.

For the highest references and illustrated catalogue giving full description, address

BRADLEY PULVERIZER COMPANY,

92 State St., Boston, Mass.

STEAM ROAD ROLLERS.



Kelly-Springfield Road Roller Co.
 SPRINGFIELD, OHIO.

JEFFREY ROCK DRILLS—Best on the Market.



Send for our Catalogue
 No. 76.

Also Manufacture

Elevating, Conveying,
 Coal Mining, Coal
 Washing Machinery.

Electric Locomotives.

**THE JEFFREY
 MFG. CO.**

Columbus, Ohio, U. S. A.

WE PULVERIZE

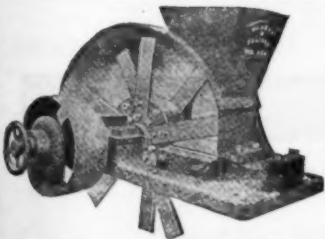
AND SEPARATE BY AIR.

THE ONLY MILLS IN THE WORLD

GUARANTEED DUSTLESS.

RAYMOND BROS. IMPACT PULVERIZER CO.

143 LAFLIN STREET, CHICAGO.



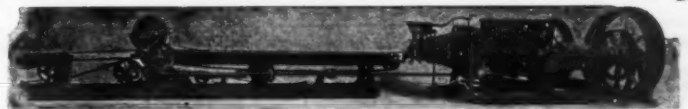
OUR DOUBLE DISC PULVERIZER.

Its Adaptation:

Pulverizing lumpy acid phosphate and tailings.
 Grinding steamed bones, tankage fish scrap,
 oyster shells and other fertilizing materials.
 This machine is an improvement of our single
 disc, runs easy, requires but little power, has
 few wearing parts, which are cheap and easy
 to replace.

Walker & Elliott, Wilmington, Del.

"New South" Brick Machinery.



Specially designed for working Southern clays. Three sizes with capacities from
 6 to 60,000 per day. Hundreds in daily use. 12 years' experience.

J. C. STEELE & SONS,

Statesville, N. C.

OHIO BRICK and TILE MACHINES Unequaled for BUILDING,

PAVING and FIRE BRICK.

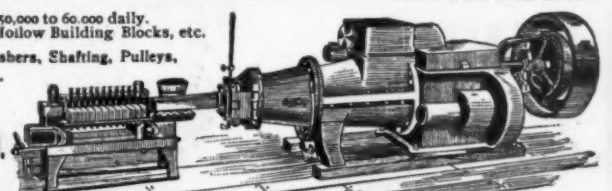
Six sizes. Capacity 50,000 to 60,000 daily.
 Drain Tile, Hollow Building Blocks, etc.

Pug Mills, Clay Crushers, Shafting, Pulleys,
 Belting, Castings.

Send for Catalogue.

E. M. FREESE & CO.

Gallion, Ohio, U.S.A.



IMPROVED WASHERS

Ore,
 Phosphate.

Elevators, Conveyors, etc.

McLANAHAN-STONE MACHINE CO.

HOLLIDAYSBURG, PA.

H. C. LARRABEE.

JNO. C. MURPHY.

CAROLINE IRON WORKS,

Pyrites Burners Lump or
 Fine.

Eggs, Nitro Pots Various
 Sizes.

Acid Egg a Specialty.

Write for Prices.

Cor. Caroline and Lancaster Sts., Baltimore, Md.

AIR COMPRESSORS

ALL STYLES—ALL SIZES

ROCK DRILLS

SIMPLEST AND MOST ECONOMICAL

McKIERNAN DRILL CO.

170 BROADWAY, NEW YORK.



ROAD BUILDING MACHINERY

and supplies of every description
ACME ROAD MACH'Y CO., FRANKFORT, N. Y., U. S. A.

AIR COMPRESSORS. FOR ALL PURPOSES

SEND FOR CATALOGUE

AMERICAN AIR COMPRESSOR WORKS,

26 CORTLANDT ST., NEW YORK.

BRICK MACHINES,

Clay Grinding and Tempering Mills,
Brick Yard Supplies.

Complete Equipments—Hand or Power.
Interesting Catalogue upon request.

GEO. CARROLL,
1819-21-23 N. Germantown Ave., Cor. 5th,
PHILADELPHIA, PA.
Whatever Your Needs, We Can Supply Them.

THE FERNHOLTZ BRICK MACHINERY CO.

MANUFACTURERS OF

Dry Press Brick Machinery.

Dealers in Brick Yard Supplies.

Bayle Ave. & Old Manchester Road, St. Louis, Mo.

PERFORATED METAL

IN SHEET

**TIN, ZINC, COPPER,
BRASS AND STEEL**

EDWIN B. STIMPSON & SON

31 SPRUCE STREET
NEW YORK

PERFORATED METAL

CONVEYOR LINING

FOR **SUGAR WORKS.**
RICE MILLS. **PHOSPHATE MINES.**
THE ROBT. AITCHISON PERFORATED METAL CO.
303-305 DEARBORN ST. CHICAGO ILL.



Get Our Prices.

Perforated Metals,

for all kinds of Screens—Brass, Iron, Steel, Tin,
Copper, Zinc—perforated as required. Perforated
Brass and Tin always in Stock.

PROMPT SHIPMENTS GUARANTEED.

A. J. BECKLEY CO.

Works—GARWOOD, N. J.

When in Need of LEAD PIPE OR SHEET LEAD

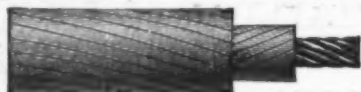
For Sulphuric Acid Chambers

Send your orders to The JAMES ROBERTSON MANUFACTURING CO., Baltimore, Md.

WIRE ROPE

All kinds that others make, and some that others do not. For instance,

THE

PATENT LOCKED-WIRE ROPE

Note the smooth surface, and how the exterior wires interlock, resulting in long life, and no displacement of wires. Nothing equal to it as a track cable for Cable Hoist Conveyors. Also, Iron and Steel Wire of all kinds.

Manufactured by **THE TRENTON IRON CO.** Trenton, N. J.

NEW YORK OFFICE—Cooper, Hewitt & Co., 17 Burling Slip. CHICAGO OFFICE—1114 Monadnock Bldg.
PHILADELPHIA OFFICE—614 Betz Bldg.

Wire Rope. Insulated Wires.

Send for Handsomely Illustrated Catalogs.

Hazard Mfg. Co.,
Wilkesbarre, Pa.

NEW YORK: 50 Dey Street. CHICAGO: H. Channon Co.
24 Market St.



HENDRICK MFG. CO.

CARBONDALE, PA.



PERFORATED SHEET METALS

FOR SCREENING
COAL, COKE, ONE AND ROCK.
ALSO FOR
COTTON SEED OIL MILLS
AND
PHOSPHATE MINES.

**Wire Rope Thimbles**

sued to the protection of wire rope where it is joined to anything.

Especially Adapted to Telegraph and Telephone Lines and Kindred Uses.

Made of steel either plain or galvanized.
Will endure the test of time and wear.
Made in regular and extra large sizes.
Prices on request.

Jackson Mfg. Co., Harrisburg, Pa.

BRODERICK &**WIRE**

Ordinary Steel Rope after 4½ years' wear



showing broken wires.

Send for Catalogue.

805 to 809 N. Main St.,

Mfrs.

of

BASCOM ROPE CO.**ROPE**

Patent Steel Rope after 6 years' wear



doing double the work.

Send for Catalogue.

ST. LOUIS, MO., U. S. A.



6-in...
7-in...
8-in...
9-in...
10-in...
11-in...
12-in...
13-in...
14-in...
15-in...
16-in...
17-in...
18-in...
19-in...
20-in...
21-in...
22-in...
23-in...
24-in...

All a
65-ft. bar
and 40-ft

BRIDGE

CHE

336 to

SKYLIC

W. C. W

Standard for Twelve Years

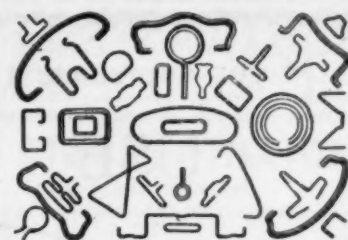
"THE STANDARD BY WHICH ROOFING QUALITY IS JUDGED."

RUBEROID ROOFING

TRADE MARK REGISTERED

THE PIONEER WEATHER-PROOF AND ELASTIC ROOFING.
WEARING QUALITIES UNEQUALED BY ANY OTHER ROOFING.
WATER-PROOF. ACID-PROOF. FIRE-RESISTING.

MANUFACTURED SOLELY BY
THE STANDARD PAINT COMPANY,
100 WILLIAM STREET, NEW YORK. CHICAGO OFFICE, 188-190 MADISON ST.



WIRE FORMED TO ANY SHAPE.
We have modern machinery for this work.
Send Sample for Prices.
The Ludlow-Saylor Wire Co., St. Louis, Mo.



Burrowes

Rustless SCREENS

Keep Out FLIES and MOSQUITOES
Made only to order. Guaranteed to fit. Best in the World. Reasonable in price. Estimates furnished. We pay freight.

The E. T. Burrowes Co.
Factories at Portland, Maine
Baltimore Office, 315 Equitable Bldg.
Burch & Hughes, Sales Agents

The Fred. J. Meyers Mfg. Co.

HAMILTON, O.
Manufacturer of Office and Bank Railings. Window Guards of every description. Elevator Cabs and enclosures. Stable Fittings and Crestings. Ticket and Conductors' Patches. Wire Cloth for Coal and Ore Mines.
Send for Catalogue.

Gainesville Iron Works,

R. I. MEALOR, Mgr.
Stamp, Saw, Cane Mills, Mining and Mill Supplies.
Shafting, Pulleys, Architectural Iron Work, Founders and Machinists.
GAINESVILLE, GA.

PAROID ROOFING
Satisfied Customer. IT LASTS.
Mill and Office. F.W. BIRDSON.
East Walpole, Mass. Est'd 1887.
New York, Chicago.

BUFFALO WIRE WORKS CO.
FORMERLY SCHEELER'S SONS
WIRE CLOTH & WIRE GOODS
BUFFALO, N. Y.

WIRE RAILING

AND ORNAMENTAL WIRE WORKS.
DUFUR & CO.
311 N. HOWARD ST. BALTIMORE
Wire Railing for Cemeteries, Lawns, Gardens, Offices and Balconies; Window Guards, Tree Guards, Wire Cloth, Sieves, Fenders, Cages, Sand and Coal Screens, Iron Bedsteads, Chairs, etc.

CARS—WHEELS—AXLES

CARS—Coal Mining—Ore Cars—Contractors' Dump Cars—Lumber Trucks, etc.
WHEELS—(8" to 24" diameter) SELF-OILING Capped—Side Pockets—Plain Spoked—Plate.
AXLES—Machinery Steel—Square or Round—Any gauge.
NOTE: Our wheels will outlast any you have ever used. We use charcoal iron mixed on a scientific chemical basis. Our methods and wheels are ahead of the times. A sample will convince you. Wheels have deep chill and tough hub for longest wear. We do not THINK, we KNOW we can please you.

PRICES—BLUE PRINTS—CUTS—ESTIMATE BLANKS
ON APPLICATION.

SANFORD-DAY IRON WORKS, KNOXVILLE, TENN.

Mining Equipment, Drums, Sheaves, Rods, Pulleys, Cast Frogs and Turn-Outs, Grate Bars, Grates, etc.

THE NEW JERSEY WIRE CLOTH CO.

For information about
WIRE LATHING,
With or without
Stiffening Ribs,
Roebbing's System of Fire-Proofing,
ADDRESS
The Roebbing Construction Co.
121 Liberty St., NEW YORK.

Manufactures
WIRE CLOTH
FOR ALL PURPOSES.

POULTRY NETTING, WOVEN WIRE FENCING.

ROEBLING'S WIRE is used in all of the products of this Company.

For Catalogs, Samples and Information, address

TRENTON, N. J.

J. E. BOLLES Iron and Wire Works.



Bank Railings, Elevator Enclosures and Cars, Grills, Electro Bronze Work, Fire Escapes, Iron Shutters, Stable Fittings, Window Guards, etc.

Send for Catalogue No. 20 M. Mention line of business. Detroit, Mich.

Easton Foundry & Machine Co.

Main Office and Works, Easton, Pa.
New York Office, 36 E. 22nd St.

BEAMS, CHANNELS and ANGLES.
IMMEDIATE DELIVERY.

CUT TO LENGTH. WRITE FOR QUOTATIONS.

Beams	Channels	Angles—Even Legs
6-in. 12½ lbs.	6-in. 8 lbs.	(Continued)
7-in. 15 "	7-in. 9½ "	4-in. x 4-in. x ½-in.
8-in. 18 "	8-in. 11½ "	6-in. x 6-in. x ½-in.
9-in. 22½ "	10-in. 15 "	6-in. x 6-in. x ½-in.
10-in. 25 "	12-in. 20½ "	Angles—Uneven Legs
11-in. 28 "	15-in. 30 "	3-in. x 2½-in. x 5/16-in.
12-in. 31½ "		4-in. x 3-in. x 5/16-in.
13-in. 35 "		4-in. x 3-in. x ½-in.
14-in. 40 "		4-in. x 3-in. x ½-in.
15-in. 42 "		5-in. x 3½-in. x ½-in.
16-in. 46 "		5-in. x 3½-in. x ½-in.
18-in. 55 "		6-in. x 3½-in. x ½-in.
20-in. 65 "		6-in. x 3½-in. x ½-in.
24-in. 80 "		6-in. x 4-in. x ½-in.

All angles, channels and beams up to and including 15 in. x 50-lb. are carried in 60-ft. and 65-ft. bars; 18-in. 55-lb. beams in 30-ft., 33-ft. and 36-ft. bars; 20-in. 65-lb. beams in 35-ft., 38-ft. and 40-ft. bars; 24-in. 80-lb. beams in 40-ft., 45-ft. and 48-ft. bars.

CASTINGS OF EVERY DESCRIPTION AND UP TO 10 TONS

BRIDGES, BUILDINGS, ROOFS AND OTHER **Structural Steel**

CHESAPEAKE IRON WORKS,

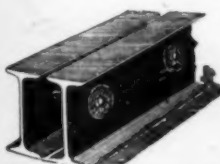
Manufacturers of

Ornamental Iron Work.

336 to 342 North Street,

Baltimore, Md.

BEAMS, CHANNELS, ANGLES, and CAST IRON COLUMNS.



Headquarters for
BUILDERS' IRON WORK
AND ALL KINDS OF
BEAMS, GIRDERS, COLUMNS, SILLS, WINDOW GUARDS, OFFICE RAILING, IRON AND WIRE FENCES.

SEND FOR CATALOGUE. PROMPT SERVICE. LOW PRICES.
EUREKA SUPPLY CO., CHATTANOOGA, TENN., 8th and Pine Streets

SKYLIGHTS, HOT AIR VENT, ROOFING OF ALL KINDS, CORNICES, FIRE-PROOF WINDOWS, EXHAUST AND BLOW PIPE.
W. C. WULF & CO., LOUISVILLE, KY.

BELMONT IRON WORKS,
PHILADELPHIA, PA.
STRUCTURAL & ORNAMENTAL WORK.
1000 TONS
BEAMS, CHANNELS & ANGLES IN ALL SIZES.
FOR SALE FROM STOCK, PLAIN, PUNCHED & FRAMED.
GIRDERS, COLUMNS, ROOF TRUSSES, BRIDGE RAILINGS & HOUSE RAILINGS.
ALL CLASSES OF ARCHITECTURAL WROUGHT & CAST IRON WORK.

If you appreciate a Good Roof =
USE

CAREY'S MAGNESIA FLEXIBLE CEMENT ROOFING :
FOR NEW OR OLD BUILDINGS.

ASK FOR OUR
CATALOGUE.

29 Branches

See our Covering
Advertisement on Page 28

Manufactured by

The Philip Carey Mfg. Co. - Lockland, Ohio.

Absolute Satisfaction

MAGNITE COLD-WATER PAINT for interior and exterior work furnishes it. A material of more than ordinary merit. Durable, light-reflecting, costs little. We have prepared a book at considerable expense treating of Magnite. It is yours for the asking. Ask now.

J. A. & W. BIRD & CO., 10 Well St., Boston, Mass.

AQUALITE

THE LATEST AND BEST
COLD WATER PAINT

For Outside and Inside Work.
Fire-Proof and Weather-Proof.

All the advantages of others, many features exclusively its own.

Columbia Refining Co.
32 BROADWAY, NEW YORK.

MINERAL WOOL

FIRE, SOUND AND VERMIN PROOF INSULATOR.

Samples and Circulars Free.

U. S. MINERAL WOOL CO., 143 Liberty St., NEW YORK.

For PAINTING MILLS, FACTORIES AND WORKSHOPS

USE ONLY PAINTS BASED ON

ZINC WHITE.

A pamphlet, "The Paint Question," will tell you about it. Send TO US for one. The New Jersey Zinc Co., Empire Bldg., 11 Bdw., New York.

Collecting Rents . . .

is a poor business when the rent or break comes in an expensive casting. It's usually a double loss—the machine to pay for—the work to hang up.

Wisconsin Graphite Iron Filler

has a Putty to fill rough, sand holed castings, a Semi-Paste for smoother surfaces, and a life-preserving paint for the flawless. All colors. Free samples.

Wisconsin Graphite Company,
PITTSBURG, PA.

Send us the number of square feet contained in your roof and we will name you price or enough Arrow Brand Asphalt Ready Roofing to cover it, delivered at your nearest railway station.

ASPHALT READY ROOFING CO.
136 Water St., New York.

METAL SHINGLE-ROOFING

Best for house or barn. Fire-proof. Easily laid. Cheaper than slate or wood. Prices, catalogue and testimonials FREE. MONTROSS SHINGLE CO., Camden, N. J.

Subject: Good Roofing

DO NOT CONFOUND White Rock Stone-Surfaced Roofing with cheaper coal-tar goods. It is made of the best materials, overlaid by a layer of the finest grade refined asphalt, in turn protected by a layer of fine pebbles. This forms a good radiating surface, thus insuring against excessive heat in summer. The rougher the weather and longer the roof is used, the greater its reputation becomes.

BUCHANAN-FOSTER COMPANY,
724 Drexel Building, Phila., Pa.

ASTEROID The Permanent ROOFING.

ALL BUILDINGS
SCOTT & CO. MANFRS
EST. 1872.
CINCINNATI, O.



Red, Brown,
Buff and Black
MORTAR
COLORS



The Strongest and Most Economical in the Market.

One-half the amount of our Mortar Colors will do the work of any other and they are unsurpassed in Strength, Fineness, and Body. Write for Samples and Quotations.

CHATTANOOGA PAINT CO.
CHATTANOOGA, TENN.

We manufacture a superior grade of
Red Oxide of Iron Paint for Railroad Cars, Bridges, Barns, Fences, Etc.

SLATE ROOFS

LOOK THE BEST.
LAST THE LONGEST.
Write for Free Book
and lowest prices.

NAILS and
CEMENT.

JOHN GALT & SONS,
253 Broadway, - NEW YORK.
95 Washington St., CHICAGO.

TOOLS and
SLATE DRESSERS

Union Bond Steel Wall Ties

All Kinds—Galvanized

FOR
Face Brick, Veneering, Terra Cotta,
Hollow Walls, etc.

UNION BRICK BOND COMPANY, Exclusive Mfrs., PITTSBURG, PA.



From Margam Forge, Glamorganshire, South Wales, to
Martin's Ferry, Belmont Co., Ohio.

NOTE THE COINCIDENCE:

The most favored brand of roofing tin, the MF which originated at Margam Forge in South Wales about sixty years ago, is now being produced by the American Tin Plate Co. In its works at Martin's Ferry, Ohio. At the Martin's Ferry Works the MF old style process has been combined with the "New Method" of finishing Terne Plates. The result of this happy combination has been the U. S. Eagle N. M. Ask W. C. Cronmeyer, Agent, 1211 Carnegie Building, Pittsburg, Pa., for our new booklet which teems with useful information.



AMERICAN TIN PLATE CO., Battery Park Bldg., New York.

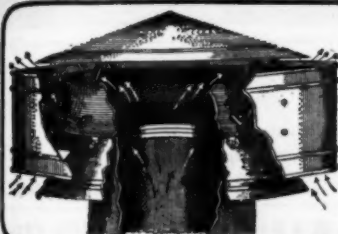
GO TO SLEEP

and let fires worry the man who hasn't
Flintkote Roofing
on his buildings. This product pleases the eye
and is VERY DURABLE.

A POST CARD BRINGS A SAMPLE.

J. A. & W. BIRD & COMPANY "The Flintkote Folks"

BOSTON, MASS.



Bacon Said: "Some books ought to be tasted; some ought to be chewed; some ought to be digested."

Modern Builders say: "Some ventilators ought to be thought of; some ought to be inspected; some ought to be used."

The Dixie Ventilator is used extensively and is manufactured by

Dowman-Dozier Mfg. Co., Atlanta, Ga.



**YOU WANT
THAT TONAWANDA
MERRY-GO-ROUND
BIGGEST MONEY MAKER
ON EARTH.**

HERSCHELL, SPILLMAN & CO.
162-168 SWEENEY STREET,
North Tonawanda, NEW YORK.

For any information about

CAROUSELS and all MERRY - GO - ROUNDS

as to Prices, Sizes and Terms, Address

P. C. McINTIRE & CO., Charlotte, N. C.

Agents for following States: Virginia, North Carolina, South Carolina, Georgia, Florida, Alabama, Mississippi, Louisiana, Texas, Kentucky and Tennessee.

York Safe & Lock Co.

MANUFACTURERS OF

**Safes and
Vaults**

York, Pa. Baltimore, Md.

**CORTRIGHT Metal Slat**

Victoria Shingles

Illustrated and described in our

new catalog, entitled

"THE CLINCHING ARGUMENT."

Cortright Metal Roofing Co.

Philadelphia and Chicago.

**My Letters Make
Good Castings.**

Foundrymen and Patternmakers everywhere use them. Made in many sizes and styles and of lead composition or brass. Wholesale or retail and at low prices. Samples free.

A. W. BRIM, Seneca Falls, N. Y.

2

American Roofing Company,
MOBILE, ALA.

GRAVEL ROOFS.**DO YOU USE PAPER?**

We make all grades for

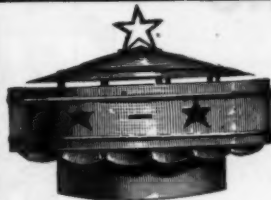
**ROOFING,
BUILDING,
SHEATHING
and LINING PURPOSES.**

Samples and Prices sent upon application.

C. S. GARRETT & SON CO., Paper Makers,
20 and 22 S. Marshall Street,
PHILADELPHIA.

ROOFING WARREN CHEMICAL & MFG. CO.

16 Battery Place, New York.

**THE STAR VENTILATOR****Storm-Proof. Effective.**

For Ventilating Factories of all kinds, Foundries, Machine Shops, Power Houses, &c.

Merchant's High-Grade Roofing Plates.

Made by the Palm Oil Process.

No Wasters.

Evenly Coated.

The Brands are: "Merchant's Old Method," "Merchant's Roofing," "American Old Style," "Camaret," "Alaska." Each sheet stamped. Send for booklet, "How Roofing Tin (good and bad) is made."

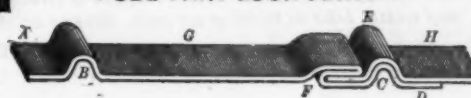
Philadelphia
New York**MERCHANT & CO., Inc.,**
Sole Manufacturers.Chicago
Brooklyn**SAGENDORPH'S****METAL SHINGLE**

**PAINTED STEEL, TIN
OR GALVANIZED**

3 Sizes—7 x 10, 10 x 14, and 14 x 20 inches.

SEE THAT LOCK JOINT

EMBOSSED



PLAIN

THE PENN METAL CEILING & ROOFING CO.
PHILADELPHIA and BOSTON.

*The Arrangement
Causes the
Contrast*

When asphalt, felt and gravel
are promiscuously mixed, nothing
of commercial value results. When
they are properly arranged in layers,
a peerless roofing results.

STOWELL MFG. CO.

JERSEY CITY, N. J.

**PERFECTED
GRANITE ROOFING**

**The Standard
Ready Roofing.**

If you want the best prepared
roofing money can buy, get Per-
fected Granite Roofing. Will resist fire
longer than any roofing material with
the same range of adaptability and is not
affected by steam, acids, heat, cold, rain,
snow or chemical fumes. Easy to lay and
always lays smooth.

Send for photo pamphlet.

Eastern Granite Roofing Co.
Irving Building, New York.

**NATIONAL
ROOFING & SUPPLY CO.**

LOUISVILLE, KY.

Gravel Roofers.
Cement and Asphalt Pavers.
Building Papers.
Two and Three-Ply Ready Roofing.

Thos. W. Simpers & Co.

Crozer Bldg., Philadelphia.

Plates, Sheets, Roofing, Bars, Shapes,
Tin and Terne Plates.

LIGHT RAILS A SPECIALTY.

**Metal Skylights**

that positively will not leak, drip, sweat or
burn; self-ventilating. All about them in
our Illustrated Catalogue—free for the
asking. Shall we mail it to you?

E. VAN NOORDEN CO.

950 Massachusetts Ave.
BOSTON, MASS.

WOOD WORKING

We make a complete line of machinery for wood workers, and our machines are continually undergoing improvements to make them as mechanically perfect as skill and new inventions, and a successful experience of three-quarters of a century can offer. While we are known wherever power in the wood shop is used, some of the tools we have just finished may be new to many of you, so write us for particulars concerning them. Catalogue, band saw pamphlet and sander book free.

J. A. FAY & EGAN CO.



MACHINERY.

No. 1 1/2 Double Lock-Corner Box Machine.

A newly improved machine for box makers, and to them we extend an invitation to investigate its merits. It has them, and we have illustrated matter fully describing them, which will be sent on demand. Just a point about its capacity: it will cut boards piled up to 14 inches high at one operation, so if you have much of this work to do, you will readily appreciate the amount of its output.

**270-290 West Front Street,
CINCINNATI, O.**

Notice This, Please!

Our Rotary Excelsior Machine makes a straight cut 16 inches long, 6 inches wide and of any thickness; the strands may be cut any width, 1-60 to 1-100 of an inch, thicker or thinner; has a capacity of 400 lbs. per hour; is simple, durable, strong and sure.

The American Excelsior and Machine Co., Baltimore, Maryland.

E. E. TITUS, Founder and Machinist,

Petersburg, Va.

MANUFACTURER OF LATEST IMPROVED

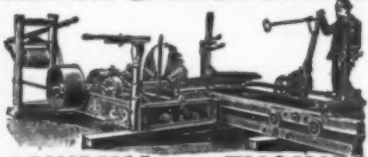
Veneer Cutting Machines,

With Impression Rolls for BASKETS, ORANGE BOXES, ETC., ETC.

Butter Dish, Berry Box, Fruit Basket, Orange Box, California Grape Basket and Truck-Barrel Machinery a Specialty.

CONTRACTS TAKEN FOR COMPLETE OUTFITS.

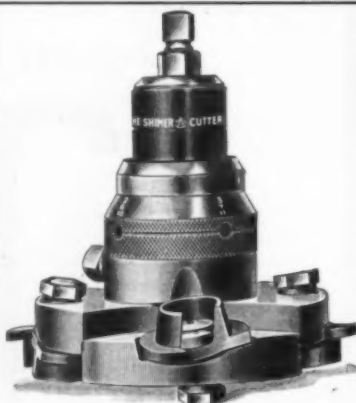
HENCH & DROMGOLD'S



SAWMILL AND ENGINES

A wonderful improvement in Friction Feeds and Gigs-Back. Back motion of Carriage 3 times as fast as any other in the market. Friction Clutch Feed, causing all the feed gearing to stand still while backing; great saving in power and wear. Catalogue and prices free. Also Spring Harrows, Cultivators, Corn Planters, Shellers, etc. Mention this paper.

The Hench & Dromgold Co., Mfrs.
YORK, PA.



THE BUSINESS OF

The Shimer Cutter Head

Is to cut. It closes up when it undertakes a heavy job and gets right down to it. See the lower Bits on the under side of the upper section. You set this Head Section down close and you widen the cut for heavy tongue and groove. Address

**Samuel J. Shimer & Sons,
MILTON, PENNSYLVANIA.**

AMERICAN TYPE FOUNDERS CO.

ORIGINATORS OF
**TYPE STYLES
ELECTROTYPES**
BEST EQUIPPED PLANT IN THE SOUTH
NICKELTYPES
FOR HALF TONES. SOMETHING NEW. BIG
SAVING IN THE PRESSWORK. MAK-
ING READY MADE EASY
QUADS

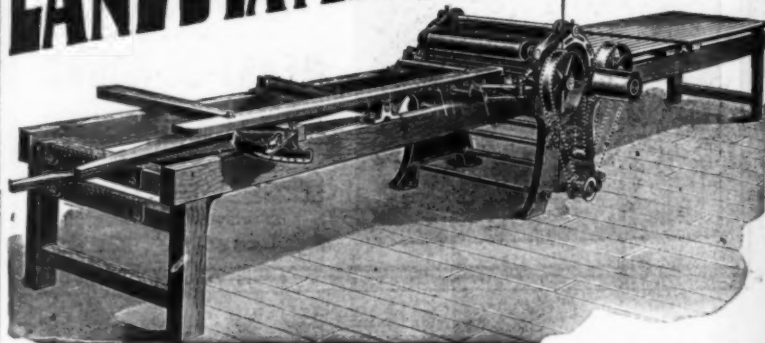
WRITE FOR SPECIAL PRICES AND DISCOUNTS
COR. WATER AND FREDERICK STS.
BALTIMORE, MD.

CHAS. B. CONNER, MANAGER.

Boilers, Stacks, Tanks.

McGaffio & Kountz, Alliance, O.

LANE'S LATEST GANG EDGER 14 INCH SAWS



Highest Award, Gold Medal, at the S. C., Interstate & W. I. Exposition.

PAR EXCELLENCE AT THE PRICE.

\$137.45 with 2 saws, 1 movable; \$145.75 with 3 saws, 2 movable. Terms Cash. F. O. B. Montpelier, Vt. Will edge straight. Front roll raised and feed stopped from operator's position. Saws quickly changed. Front and rear tables easily removed for transportation.

We also manufacture Saw Mills, Set Works, Dogging Devices, etc. Water Wheels, Log Jacks, Canters and Niggers, Drag, Swing and Friction Feed Cutting-Off Saws, Live and Dead Rolls, Edgers, Trimmers, Cutting Off Tables, Lath, Shingle and Clapboard Machines. Planers and Matchers, Transmission Machinery and the Anderson Patent Traveling Cranes.

Circulars and Prices on Application.

**Lane Manufacturing Company,
MONTPELIER, VERMONT, U. S. A.**

Atkins "Improved Hoosier Extension" Hack Saw



The time you lose depends much on the tools you use. This Hack Saw Frame, quickly adjustable to different length blades, is a time-saver. Our Hack Saw Booklet will tell you why. Write for it.

SAWS of All Kinds

E. C. ATKINS & CO., Inc.

Leading Saw and Tool Manufacturers,
INDIANAPOLIS, IND.

BRANCHES:—Memphis, Tenn.; Atlanta, Ga.; Minneapolis, Minn.;
Portland, Ore.; No. 64 Reade St. N. Y. City; Chicago, Ill.; Toronto, Can.; Seattle, Wash.

FARQUHAR Portable Saw Mills



with Engines and Boilers Complete.

Made in seven sizes, friction feed, cable

lightning rig, patent chain set works and

improved dogs. **AJAX CENTER**

CRANK ENGINES are constructed

with special reference to the peculiar

work required of them. This combination of engine and mill

makes the best sawmill outfit on earth.

**A. B. Farquhar Co., Ltd.
York, Pa.**

Wood-Working Machinery

FOR ALL PURPOSES.



H. B. Smith Mach. Co.
Smithville, N. J.

BRANCHES: NEW YORK,
CHICAGO,
BOSTON.

INTERNATIONAL CREOSOTING AND CONSTRUCTION COMPANY, WOOD PRESERVING.

Address all communications to
Office, Galveston, Texas.

Send for Pamphlet.

WORKS: BEAUMONT, TEXAS.
TEXARKANA, TEXAS.

Capacity 15,000,000 feet B. M. per Annum.
Capacity 57,000,000 feet B. M. per Annum.

CAPACITIES BASED ON
24-HOUR TREATMENT.

Timber treated with any of the best
processes now in use.

YELLOW PINE!

"WILKINS FILLS THE BILL" For Any Quantity, For Anywhere.

Weekly Steamer Shipments to New York City and
Vicinity; also Rail Facilities. Timbers: All Kinds
(Including Car Sills), Cross Ties. Kiln-Dried Saps.
Flooring, Ceiling, Etc. Tupelo Gum.

Van S. Wilkins Lumber Co.

Mills: BEAVER MEADOW, ALA.
EVANSTON, MISS.
PERDIDO, ALA.

Mobile, Ala. P. O. Box, 582.



The right way to prepare wood for
the market is to use one of our

Iron Frame Wood Splitters

If you have wood to saw or split, our
booklet No. 33 A will
interest you.

Chattanooga Machinery Co.
Chattanooga, Tenn.



OBER MFG. CO.

CHAGRIN FALLS, OHIO, U. S. A.

Manufacturers of

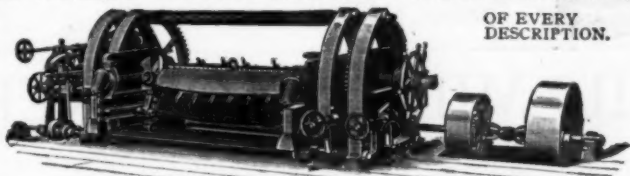
PATENT HANDLE,
SPOKE and VARIETY TURNING LATHES,
SANDERS, ETC.

Lathes for Turning Axe, Adze, Pick, Sledge,
Hammer, Hatchet, Auger, File, Knife, Chisel,
Fork, Hoe, Rake, Broom, Ice Hook and Mop
Handles, Pike Poles, Whiffletrees, Yokes,
Spokes, Porch Spindles, Table Legs, Tent
Stakes, Ball Bats, Mallets, Gun Stocks, etc.

Boring Machines, Automatic Sand-
ers, Chucking Machines, Shapers.

WE ARE POSITIVELY HEADQUARTERS FOR STRICTLY HIGH GRADE VENEER CUTTING MACHINERY

OF EVERY
DESCRIPTION.



YOU WANT THE BEST. WE HAVE IT.

THE COE MFG. CO., Painesville, Ohio, U. S. A.

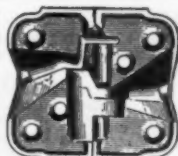
ESTABLISHED 1859.

DE LOACH MILL MFG. CO.

Manufacturers of

High-Grade Mill Machinery

ATLANTA, GA., and NEW YORK, N. Y.



Cabinet and Builders' Hardware.

Specialties in Iron.
Wrightsville Hardware Co.
Wrightsville, Pa.

BEACH'S Sawing Machinery.

H. W. BEACH, MONTROSE, PA.

Plow Handle MACHINERY.

Write for Circular and Prices.

B. M. ROOT, YORK, PA.

The Montgomery Lumber Mfg. Co.

Montgomery, Ala.

Consolidated plants of the Alabama
Hardwood Mfg. Co. and the Mont-
gomery Sash, Door & Blind
Co., greatly enlarged
and re-equipped.

MANUFACTURERS OF

Flooring, Ceiling, Finishing
Moulding, Sash, Doors
and Blinds.

Also Picker Sticks, Pick Borers, Sweep
Sticks, Plugs and Shuttle Blocks.

Prepared to execute promptly orders of any
magnitude at advantageous prices.
Special attention invited to our ability to
promptly fill orders for PICKER STICKS and kin-
red articles in any quantities.
Correspondence solicited.

Burton Veneer Co.,

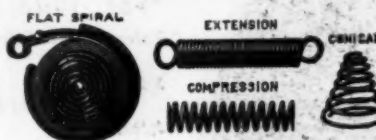
Manufacturers

Kiln Dried Gum, Poplar
and Spruce Pine.

1-32 to 5-16 thick.

Correspondence Solicited.

MONTGOMERY, ALA.



Wire and Springs

OF EVERY DESCRIPTION.

CARY SPRING WORKS,

240 & 242 W. 29th St. NEW YORK, N.Y.

THE T. WILCE CO.

Polished Hardwood Flooring,
Kiln Dried, Bored and End-Matched.

22d and Throop Streets, CHICAGO, ILL.

Maple Flooring for Cotton Mills, Factories, Warehouses and Buildings
for like purposes a special feature.
Delivered Quotations made to any point in the United States. Write
for prices and our descriptive Booklet.

The Red Cypress Lumber Company, Macon, Ga.

MANUFACTURERS

BAND SAWED CYPRESS, PINE, HARDWOOD,
SHINGLES AND LATHS.

We own 25,000 acres of Timber Land. Mill located near Gulf Coast. Capital Stock paid in \$200,000

EDWIN A. HALLAM,
President.

W. E. McCaw,
Vice-President.

WM. J. CRICHTON,
Secretary and Treasurer.

THOMAS FORMAN CO., DETROIT, MICH.

MANUFACTURERS OF

High Grade FLOORING, Kiln-Dried, Bored
Maple and Oak and End Matched

The most durable floor ever made, for Cotton Mills, Factories,
Warehouses and Office Buildings.

CORRESPONDENCE SOLICITED.

We can refer to many large buildings in the South which we have furnished with this material.

J. P. STETSON, President.

J. M. MATHEWS, Secy. and Treas.

STETSON LUMBER CO., Macon, Ga.

Manufacturers and Wholesale Dealers in

Rough and Dressed Long Leaf Yellow Pine.
Car Stock and Bridge Timbers a Specialty.

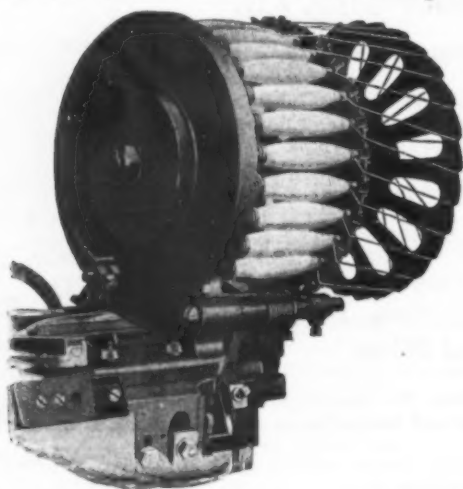
For information about the

KNITTING BUSINESS

Write McMICHAEL & WILDMAN MFG. CO., NORRISTOWN, PENNA.

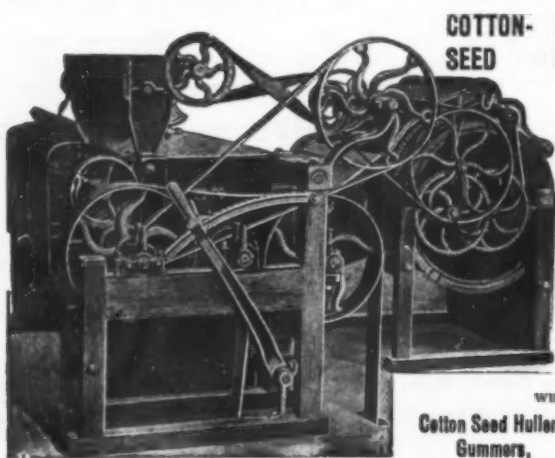
A NEW HOPPER

For the New Century.



The Hopper makes the Loom. Note the Size and the Simplicity.

THE DRAPER CO., Hopedale, Mass.



COTTON-SEED

Linter

For 1903.

Patent Automatic Feeder.

Adjustable Seed Board.

Adjustable Friction Drive for Float.

New Method Drive. Patent Iron Cylinder.

Whole Saw Wood, Whole Saw Iron Cylinder.

WE ALSO MAKE

Cotton Seed Hullers, Saw Filing Machines, Gummers, Cotton Gins.

CARVER COTTON GIN CO.

East Bridgewater, Mass., U. S. A.

The Latest and Best.

Looms, Harness Motions and Dobbies, Beaming, Spooling, Winding, Dyeing and Sizing Machinery, Power Transmitting Machinery, Freight Elevators.

Fairmount Machine Company,

Twenty-Second and Wood Streets,

Philadelphia, Pa.

CARDS. DRAWING.

SPINNING FRAMES.

MASON MACHINE WORKS, COTTON MACHINERY, TAUNTON, MASS.

COMBERS. LAP MACHINES.

MULES. LOOMS.

KILBURN-LINCOLN & CO., FALL RIVER, MASS
LOOMS FOR PLAIN AND FANCY WEAVING.

The Kilburn-Lincoln High-Speed Loom is the Result of over fifty years' experience in Loom Building.

LATCH NEEDLES

For All Makes of Machines.

Mayo Knitting Machine & Needle Co., Franklin Falls, N. H.

LOWELL MACHINE SHOP,
LOWELL, MASS.

Cotton Machinery

We Manufacture Everything Required for the Complete Equipment of Cotton Mills.

Plans and Estimates Furnished on Application.

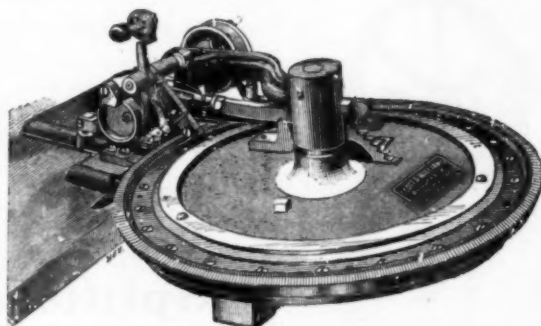
Correspondence Solicited.

Scott & William's

BUILDERS OF

RIB KNITTING MACHINERY

For Underwear and Hosiery.



We call your attention to our machinery for making all kinds of Underwear, Hosiery, Athletic Garments, Toques, Tam O'Shanter, Gloves, etc.

The illustration shows our Latest Improved Single Stitch Looper with the needle working from the inside; it also has a point ring tension attachment. This machine can be made of any desirable gauge necessary for the purpose of closing the toes of stockings and other knitted goods where two edges are to be joined together.

We build Ribbers, Underwear and other Machinery for Knitting Mills

as well as a Complete Line of Full Automatic and $\frac{3}{4}$ Automatic Seamless Hosiery Machinery. Full particulars, samples and special catalogues on application.

2079 E. Cumberland Street,

Philadelphia, Pa., U. S. A.

**Save Your Factory From Fire.**

Insurance may be able to build another Factory for you but it won't save you for the loss of time. 60¢ of all fires in large cities are put out with Chemical Extinguishers before the fire gains headway. Be ready "on the spot" for any fire with

Badger's Fire Extinguisher.

Strong, Simple, Always Ready. Throws a stream 50 feet. A child can use it. Send postal card for full particulars. Used by the United States Government.

HUNDREDS OF MILLS,

the Boston & Maine, Seaboard Air Line, Boston Elevated and other railroads.

Badger Fire Extinguisher Co., Dept. A, 32 Portland St. BOSTON, MASS.

OIL MILL MACHINERY

Our specialties are Seed Cleaners, Rolls, Hullers, Crushing Rolls, Cookers, Formers, Presses and Reboxing other makes of Presses.

SOUTHERN ENGINEERING CO., So. Eastern Agts., Sumter, S. C.
STUART W. CRAMER, Charlotte, N. C., is Southern Agent for our **NUCKLE JOINT CLOTH BALING PRESSES.**

G. H. BUSHNELL PRESS CO., Thompsonville, Conn., U. S. A.

O. A. ROBBINS,
ENGINEER.

Machinery & Equipment & Cotton Mills.

OFFICE: Cor. 4th and Tryon Sts., CHARLOTTE, N. C.

A. H. WASHBURN,
SOUTHERN AGENT

SACO & PETTEE MACHINE SHOPS

Everything needed for the Complete Equipment of COTTON MILLS to Manufacture Yarns and Woven Fabrics of all Kinds,
CHARLOTTE, NORTH CAROLINA.

All Kinds of Cotton and Woolen Mill Supplies.

Our goods are made of best materials by skillful workmen. From our knowledge we know just what mills need, and are always ready to supply them at proper prices. Send for list of articles manufactured.

American Supply Co., Providence, R. I.

Cottonseed Oil Machinery.

(Not in any Combination or Trust.)

Modern Ginning Systems.

Write for Catalogue.

E. Van Winkle Gin & Machine Works,

Atlanta, Georgia, U. S. A.

Local Oil Mills and Ginneries Combined.

Threshers and Cleaners

For WHEAT, OATS and RICE.

The Simplest, Cheapest
and Best Made.

Also COTTON-SEED OIL MILLS,
And HYDRAULIC COTTON PRESSES.

Information furnished upon application to

The Cardwell Machine Co., Richmond, Va.

Cottonseed Oil Machinery.

Tobacco Cutting Machinery.

Brass Goods

FOR ENGINE BUILDERS, STEAM, WATER AND GAS FITTERS.

Write for Catalogue.

BUCKEYE IRON & BRASS WORKS,

DAYTON, OHIO, U. S. A.

The... Exhibition Department BOURSE

Offers you an opportunity to
extend your business.

For full particulars address
Exhibition Department, THE BOURSE, Philadelphia.

SHERWOOD BOBBIN & MFG. CO.

Greensboro, N. C.

MANUFACTURERS OF

Speeder, Slubber, Intermediate and Twister Bobbins, Skewers, Spools, Spool Skewers and Clearer Rolls.

Whitinsville Spinning Ring Co.

SPINNING AND TWISTER RINGS.

Whitinsville, Mass.

NYE & TREDICK CO.

Circular Rib Knitting Machinery

For Underwear, Combination Suits, etc., Men's Underwear, Sweaters and Hosiery.

406 Arch Street, PHILADELPHIA, PA

SECOND-HAND
HYDRAULIC MACHINERY

FOR

Cotton Seed Oil Mills.

Address "AMERICAN,"

1505 Manhattan Bldg., Chicago

Stencils, Checks, Brass and Rubber Stamps, and Stock Certificates

Manufactured by

JOHN G. HULLETT & CO.

124 S. Howard St., BALTIMORE, MD.

WRITE FOR PRICES.

SECOND HAND
Printing Presses, Paper Cutters.

The Cheapest Place to Buy
SPACES and QUADS.

Write for Prices and Discounts.

SPENCER & HALL,

Type Founders and Electrotypers,
BALTIMORE, MD.

THE D. A.
TOMPKINS
CHARLOTTE, N. C. — COMPANY
COTTON MILLS

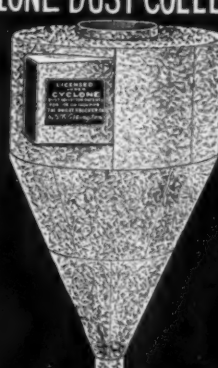
Our Dust Exhaust Systems
are the nearest approach to Perfection yet reached in this class of work.

THEY MAKE YOU MONEY.

We Modernize Old Systems.
Write Today For Prices On
Fans, Dust Separators and Complete Dust Collecting Systems.

CINCINNATI EXHAUST & BLOW PIPE CO.
324-330 W. THIRD ST. CINCINNATI OHIO.

CYCLONE DUST COLLECTOR



DIXIE MANUFACTURING CO
BALTIMORE, MD.

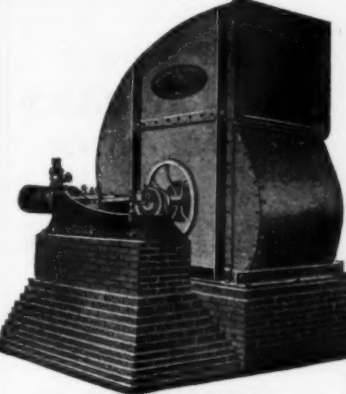
Exhaust Fans,
Exhaust and Blow Piping,
Cyclone Dust Collectors,
Dust Collectors,
Automatic Furnace Feeders.

Mechanical Experts in
Removal of

Shavings, Dust, Lint and Odors.

Estimates Furnished and All Work
Guaranteed.

Correspondence Solicited.



Directed Connected Fan and Engine.

**A & J
STEEL PLATE FANS**

Heating,
Ventilating,
Drying, Etc.

ANDREWS & JOHNSON CO.
Chicago, Illinois.



ARE YOU TROUBLED with dust from your EXHAUST FANS?
THE "Hartford" Patent Improved **Dust Separator**

will handle shavings, sawdust, lint, seeds, emery dust, cereals, etc.

Leaflet No. 53-H tells all about it.

We also install Complete Exhaust Systems.
THE HARTFORD BLOWER CORP.

Hartford

110 Suffolk St.

Conn.

SAVOGRAN KEEPS FLOORS AND SURFACES CLEAN

Highest Awards.

INDIA ALKALI WORKS, 28-37 India Wharf, BOSTON.

"26 years at it."

Railroads Inviting Factories.

GEORGIA and ALABAMA

cities and towns, such as Cartersville, Rockmart, Cedartown, Piedmont, Pell City, Birmingham and Atlanta, surrounded as they are with iron ores, bauxite, lime stone, dolomite, ochre, umber, sandstones, and other mineral wealth, require large quantities of both coal and coke to run their public works, their industries and supply domestic demands. This fuel and that required by the whole of South-eastern Alabama and Southwestern Georgia must necessarily be drawn from the Coosa and Cahaba coal fields. It is the only source of supply, and the miner is likewise afforded unusual facilities for supplying coastwise vessels touching Atlantic and Gulf ports for coal.

The Coosa and Cahaba coal fields are limited in area, but we have some valuable properties placed with us for sale and will forward map and full descriptions to those interested.

J. W. WHITE,

General Industrial Agent.

Portsmouth, Va.

SEABOARD AIR LINE RAILWAY.

YOUR ATTENTION, PLEASE!

Virginia

offers a number of fine openings in the line of

**MINING,
MANUFACTURING
and
FARMING.**

Along the lines of the

Norfolk and Western Railway

are hundreds of towns extending you a hearty welcome.

Address, for pamphlets and information,
W. B. BEVILL, PAUL SCHERER,
G. P. A. Agt. Lands & Industries.
ROANOKE, VA.

BOSTON & MAINE RAILROAD.

Lowest Rates.

Fast Train Service

BETWEEN

Boston and Chicago

St. Louis, St. Paul, Minneapolis and
all points West, Northwest, Southwest.

Pullman Parlor or Sleeping Cars on All
Through Trains.

For tickets and information apply at any
principal ticket office of the Company.

D. J. FLANDERS,
Gen'l Pass. & Tkt. Agt.,
BOSTON.



"THE ALLISON" INVALID CHAIR.

Strong, Light, Comfortable,
Easily Adjusted.
Liberal Discount to the Trade.
Catalogue "B" Free.

W. D. ALLISON CO.
995 N. Alabama St., Indianapolis.

Come to West Virginia.

Why?

It has more and a greater variety of undeveloped resources close to Eastern and Western markets than any other State. The WEST VIRGINIA CENTRAL & PITTSBURG RAILWAY penetrates the heart of the virgin timber forests and coal deposits. Cheap fuel, cheap raw material and unsurpassed railway facilities make that territory most desirable for manufacturing industries. For information in regard to timber and coal lands and manufacturing sites address

HOWARD SUTHERLAND,

Gen'l Land Agent, ELKINS, W. VA.

"Big Four"

The

World's Fair Route

From The

Leading Cities of

**OHIO, INDIANA
and ILLINOIS**

To

ST. LOUIS

WRITE FOR FOLDERS.

Warren J. Lynch, Gen'l Pass. Agt.
W. P. Deppe, Asst Gen'l P. A.

CINCINNATI, OHIO.

Rubber Stamps, Seals,
Stock Certificates and Bonds,
Manufactured by

NATIONAL SEAL WORKS

P. O. Box 60, RICHMOND, VA.

Subscribe to the Manufacturers' Record.
Price \$4 a year, or six months for \$2.

Splendid Opportunities For Profitable Investments.

MANUFACTURERS

before locating elsewhere should examine the

Excellent Locations for Factories of All Kinds

existing along the

Southern Railway and Mobile & Ohio Railroad.

Abundance of raw material, cheap fuel, plenty of good labor and unsurpassed transportation facilities tend to make the territory traversed by these lines superior for the successful investment of capital in

**Textile Mills, Lumber Mills,
Furniture Factories,
Iron and Steel Works, Etc.**

For further and detailed information address,

M. V. RICHARDS,

Washington, D. C.

Land and Industrial Agent:

**SOUTHERN RAILWAY and
MOBILE & OHIO RAILROAD.**

OPPORTUNITIES

for the location of industries are plentiful in the sections of country traversed by the various lines of the St. Louis & San Francisco Railroad, and the resources are so diversified as to offer excellent chances for many kinds of industries.

Cotton Mills

are especially needed throughout the Southwest, as the very finest quality of long staple cotton is raised, labor conditions are of the best and fuel in most sections is cheap. Excellent inducements, such as free sites, bonuses, subscriptions to stock, etc., will also be given by a number of cities and towns along the



to secure cotton mills, knitting mills and all kinds of textile industries.

Send for copy of publication entitled "Opportunities," giving detailed information about the towns and cities traversed by the Frisco System, as well as openings for all classes of industries.

M. SCHULTER, Industrial Commissioner,

Commercial Building.

ST. LOUIS, MO.

CHESAPE

Elegant

ATLANTA

Va. Steam

day) at 6.30

Elegant

and BALTIMORE

Va. Steam

Sunday) at 5

M. and Rich

Steamers

Light Street

Through

baggage chec

the City Tic

Baltimore St

Street, Balti

REUBEN FO

General M

T. H. McD

HUGHES

Artesian

Wells drill

deep

Deep Well

Southern Towns Inviting Factories.

RAYNE, LA.

A prosperous town drawing support from the three great staples of the South—Cotton, Sugar and Rice. A centre for Poultry and Truck with considerable manufacturing interests, wants more manufactures and offers

Free Sites.

Cheap Fuel.

Only 14 Miles From Jennings Oil Field.

Exemption From Taxation.

Cash Interest.

Wants Especially a Small COTTON-OIL MILL.

—ADDRESS—

C.W. LYMAN, Secretary Progressive Union, Rayne, Acadia Parish, La.

Free Land With Hydraulic and Electric Power On River and Railroad.

We own 67 acres of fine level land, two miles from Lynchburg, on the banks of the James and on C. & O. R. R. We also own an unlimited amount of power—hydraulic and electric. Hydraulic, our great dam, now completed, will supply 4000 H. P.; our electric plant, now under construction, will give large additional power.

Mr. Manufacturer, we will give you as much of our 67 acres as you need to build your plant on, for the purpose of selling you some of our power at a low rate. We'll help you in every way we can.

Lynchburg is a hustler—she has three lines of railway—unlimited and cheap power—shrewd and far-seeing business men—good street railway facilities—good papers—and public men most liberal to new enterprises. We'll give you our lands and our help if you'll come here.

Lynchburg Traction & Light Co., R. D. APPERSON, Pres. LYNCHBURG, VA.

Glamorgan Pipe & Foundry Company,

Works, Radford, Va.—Lynchburg, Va.

Office, LYNCHBURG, VA.

Manufacturers of

Cast Iron Water and Gas Pipe, Special Castings, Flange Pipe and Flanged Specials.
Gate and Compression Hydrants, Water, Gas and Steam Valves.
General Founders and Machinists.

Sizes
1½ in. to 30 in.
diameter inclusive.



TAYLOR SPIRAL
RIVETED PIPE.

FOR Water Lines, Irrigation
Centrifugal Pumps and Ex-
haust Steam Systems, SPIRAL
RIVETED PIPE is espe-
cially adapted. Allow us to send
catalogue and quote prices.

AMERICAN SPIRAL
PIPE WORKS,

Main Office and Works, CHICAGO.
New York Office, 25 Cortlandt St.

CHESAPEAKE STEAMSHIP COMPANY.

"Chesapeake Line."
Elegant passenger steamers AUGUSTA and ATLANTA, for Old Point Comfort and Norfolk, Va. Steamers leave Baltimore daily (except Sunday) at 6.30 P. M.

"York River Line."
Elegant passenger steamers CHARLOTTE and BALTIMORE, for West Point and Richmond, Va. Steamers leave Baltimore daily (except Sunday) at 5 P. M., and arrive West Point 7.30 A. M., and Richmond at 9.15 A. M.

Steamers leave Baltimore from Piers 18 and 19 Light Street Wharf.
Through tickets to all points can be secured, baggage checked and staterooms reserved from the City Ticket Offices, Nos. 109, 120 and 127 E. Baltimore Street or the General Offices, 530 Light Street, Baltimore, Md.

E. J. CHISM,
General Passenger Agent.
T. H. McDANIEL, Traveling Passenger Agt.

HUGHES SPECIALTY WELL DRILLING CO.

Artesian and Oil Well Contractors
Wells drilled 3" to any diameter; 60' to 3000' deep. Satisfaction guaranteed.
Deep Well Pumping Plants Installed. Air Lift System a Specialty.

OFFICE AND WAREHOUSES,
S. E. Cor. Ashley Ave. and Montague Street,
CHARLESTON, S. C.

BALTIMORE STEAM PACKET CO.

OLD AND RELIABLE

BAY LINE.

CARRYING U. S. MAIL.

Elegant Steamer Daily, except Sunday, from "BAY LINE" PIER, 1012 LIGHT STREET, at 4.30 P. M., for OLD POINT COMFORT, NORFOLK, PORTSMOUTH AND ALL PORTS SOUTH. Connects at Old Point Comfort, Va., with C. & O. R. R. for Richmond. Connects at Portsmouth with Seaboard Air Line, solid train Portsmouth to Atlanta. At Norfolk, connects with Atlantic Coast Line, Norfolk & Carolina, Norfolk & Southern and Norfolk & Western Railroads, and with Old Dominion Line for New Bern and Washington, N. C.

Meals on the European plan. Luxurious staterooms, Electric Lights, Steam Heat Berths Free. Reserve staterooms in advance at Bay Line Ticket Office, 103 East Baltimore St.; Albaugh's, 15 N. Charles St., and Seaboard Air Line Office, Continental Trust Bldg. Telephone C. & P. 1435; Maryland, Court land 46.
EMMET BROWN, General Pass. Agent.
KEY COMPTON, General Freight Agent.
JOHN R. SHERWOOD, V. P. and Gen. Mgr.

LOUISIANA'S INVITATION.

Provisions of Article 230 of the Constitution of the State of Louisiana.

"There shall also be exempt from parochial and municipal taxation for a period of ten years from the first day of January, 1900, the capital, machinery and other property employed in mining operations and in the manufacture of textile fabrics, yarns, rope, cordage, leather, shoes, harness, saddlery, hats, clothing, flour, machinery, articles of tin, copper and sheet iron, agricultural implements, and furniture and other articles of wood, marble or stone; soap, stationery, ink and paper, boat building and fertilizers and chemicals; provided, that not less than five hands are employed in any one factory."

LAFORCHE PROGRESSIVE UNION, Thibodaux, La.

THE LINK
USED ON THIS PUBLICATION
QUEEN CITY PRINTING INK CO.
CINCINNATI, OHIO.



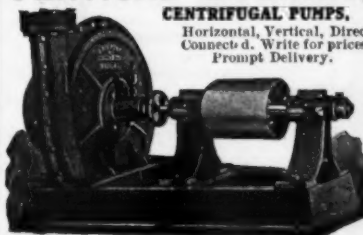
ERIE PUMP & ENGINE CO.

ERIE, PA., U. S. A.

VERTICAL ENGINES,

CENTRIFUGAL PUMPS.

Horizontal, Vertical, Direct
Connects d. Write for prices.
Prompt Delivery.



Merchants & Miners'

Transportation Company's
STEAMSHIP LINES.

For BOSTON and the EAST—Every Monday, Tuesday, Thursday and Saturday at 6 P. M.

For PROVIDENCE and the EAST—Every Wednesday, Friday and Sunday at 6 P. M.

For SAVANNAH and the SOUTH—Every Tuesday, Thursday and Saturday at 6 P. M.

For NEWPORT NEWS and NORFOLK—Daily at 6 P. M.

Accommodations and Cuisine Unequaled.

Freight handled with care and dispatch.

C. R. GILLINGHAM, Agent, Long Dock.

W. P. TURNER, G. P. A.

C. S. HOSKINS, G. F. A.

A. D. STERBINS, G. M.

J. C. WHITNEY, 2d V. P. and T. M.

General Offices—214 E. German St., Balto., Md.

HENRY R. WORTHINGTON

PUMPING MACHINERY.

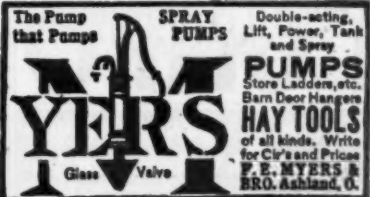
Marine Air and Feed Pumps a Specialty.

Boston Chicago Philadelphia St. Louis Butte

WATER METERS

Cleveland Pittsburgh Atlanta San Francisco

116 Liberty St., New York. New Orleans



CAMERON STEAM PUMPS



WRITE.
ASK.
LEARN.

MINES,
REFINERIES,
BREWERIES,
BOILER FEEDING.

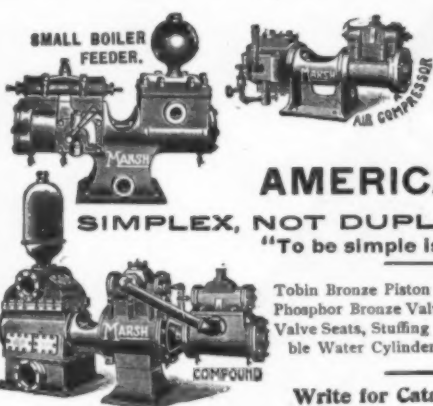
When you get right down
to the point, you will
find there are no
better pumps than
Cameron Steam
Pumps.

TANNERIES,
IRRIGATING,
FIRE PURPOSES,
RAILROADS.

THEY HAVE NO OUTSIDE VALVE GEAR.

A. S. CAMERON STEAM PUMP WORKS,

Foot of East 23d Street, NEW YORK.



MARSH STEAM PUMPS

MANUFACTURED BY

AMERICAN STEAM PUMP COMPANY,

SIMPLEX, NOT DUPLEX.
"To be simple is to be great."

Tobin Bronze Piston Rods.
Phosphor Bronze Valves.
Valve Seats, Stuffing Boxes and Removable Water Cylinder Linings.

Write for Catalogue No. 11.

MINIMUM
OF
WEIGHT,
WEAR
AND
WASTE.

MAXIMUM
OF
STRENGTH
SIMPLICITY
AND
SERVICE.

BATTLE CREEK, MICHIGAN, U. S. A.

Patent Self-Governing Steam Valve.
Patent Easy-Seating Water Valves
No Outside Valve Gear.

50,000 SOLD IN THIRTEEN YEARS.



NEW YORK, 105 Fulton St.
BOSTON, 81 Milk St.
PROVIDENCE, 21 Eddy St.
CHICAGO, 23-34 W. Randolph St.
ST. LOUIS, 718-724 Charles St.

PITTSBURG, 11 Market St.
NEW ORLEANS, 201-203 Magazine St.
MEMPHIS, 326 Front St.
KANSAS CITY, 408-412 W. Fifth St.
OMAHA, 1014-1018 Douglas St.

DALLAS, 177-179 Elm St.
SAN FRANCISCO, 31 Main St.
LOS ANGELES, CAL., 384-386 N. Main St.
PORTLAND, ORE., 85 First St.
SEATTLE, WASH., 119 Jackson St.

CLEVELAND, 95-103 St. Clair St.
DENVER, 1621-1639 17th St.
DETROIT, 97-101 Woodbridge St., West.
NORFOLK, 74 Commercial Place.
PHILADELPHIA, 1744 Market St.

MONTGOMERY, foot of Coosa St.
SAVANNAH, 126-130 Bay St.
CINCINNATI, 522 Main St.
ROCHESTER, 288-272 State St.
TOLEDO, 1-9 St. Clair St.

ALBERGER COOLING TOWERS

IMPROVED CONDENSING APPARATUS VACUUM PUMPING MACHINERY

Send for Illustrated Catalogue.

ALBERGER CONDENSER COMPANY, 95 Liberty St., NEW YORK

THE COOK WELL ...CO...

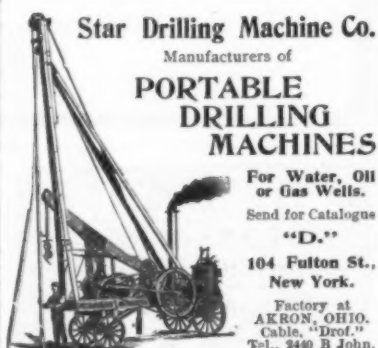
ST. LOUIS, MO., U. S. A.

Cook's System of Wells
FOR
Cities, Towns, Villages, Railroads,
Ice Plants, Breweries and
Manufacturers.

Cook's Patent Brass Tube
Well Strainer.

Cook's Deep Well
Pumping Engines.

Estimates furnished upon ap-
plication. Write for Catalogue
and Prices.



ARTESIAN WELLS

Soundings made for Foundations.
Test Boring for Water.

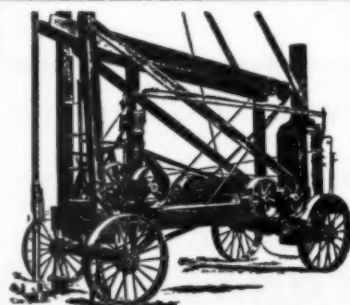
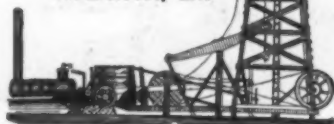
Write for references and particulars.
ISAAC H. FORD, 104 Fulton St., New York.
20 Years' Experience.

PERRY ANDREWS & BRO.

**ARTESIAN
AND
OIL WELL CONTRACTORS
AND
DRILLERS.**

Have had years of experience
in Oil Well Drilling.

Porter Place,
ATLANTA, GA.



WE ARE MANUFACTURERS OF
Portable Drilling Machinery,

Run by Steam, Gasoline or Horse-power;
for Water, Oil or Gas Wells, any depth.
Forty-two different styles. Send for
Catalogue "A."

KELLY & TANEYHILL CO.

88 Chestnut Street, **WATERLOO, IOWA.**

Well Drilling Machines

Over 70 sizes and styles, for drilling
either deep or shallow wells in
any kind of soil or rock. Mounted
on wheels or on gines or horse
powers. With en-
gines or horse
powers. Strong,
simple, durable.
Any mechanic
can operate
them. Send
for catalog.

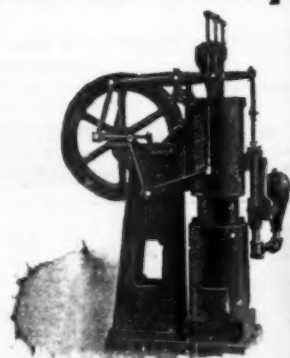
**WILLIAMS BROS.,
ITHACA, N. Y.**

GET THE LATEST
**DEEP WELL
Pumping Machinery**

of large and small
capacities.
STEAM AND POWER PUMPS
The most economical
Deep Well Pumps on
the market.

Dowdle Pump Co., Box 21, Downsville, Pa.

DENNEY IMPROVED Rider & Ericsson Hot Air Pumps.



**Reliable, Economical,
Safe and Noiseless.**

Always ready for service. Can be operated by
any one. Use any kind of fuel. Built for years by
**AMERICAN MACHINE CO.,
Wilmington, Del.**
Agents—The Tribune Hardware Specialty Co.,
105 W. Fayette St., Baltimore, Md.
Send for Catalogue R.

Water Supply

For Towns, Cities, Mills and
Industries of every kind.
Well Systems and Air Lift
Plants Installed Complete.

The BACON AIR LIFT CO.

82 Madison St., NEW YORK.
Sole Owners and Manufacturers of the
Simple and Compound BACON
AIR LIFT PUMPS

LET US HAVE YOUR SPECIFICATIONS
OF **SINGLE DUPLEX & ROTATIVE
STEAM AND POWER**

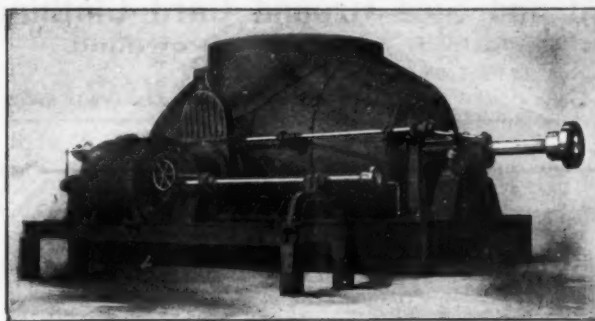
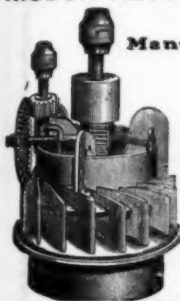
PUMPS
THE **JOHN H. MCGOWAN CO.**
CINCINNATI

**SIMPLE COMPOUND & COMPOUND CONDENSING-
ELEVATOR & WATER WORKS-
PUMPING ENGINES**

Pair

McCormick Turbines,

4000 H. P., 72 ft. head, arranged to drive generator and a single turbine to drive exciter. Two settings like cut and 3 each of 5300 H. P., built for the Hudson River Water Power Company for their Spier Falls plant and 14 pairs 51 inch wheels for their plant at Mechanicsville, N. Y.

S. MORGAN SMITH COMPANY,
York, Pa., U. S. A.
Write for Catalogue if contemplating purchase of Turbines.

RISDON-ALCOTT TURBINE CO., Mount Holly, N. J., U. S. A.


Manufacture

Turbines

to meet all conditions, either on a vertical or a horizontal shaft. Possessing high speed, great wearing qualities and easy to control. Adapted for any water power.

Risdon Cylinder and Register Gate Turbines.

Tests In	Full Gate	1/2	3/4	Average
Holyoke Flume:	.8694	.8472	.8014	.8100

Alcott's High-Duty Turbine,

High Efficiency, Easy Working Gate. Simple, Durable.

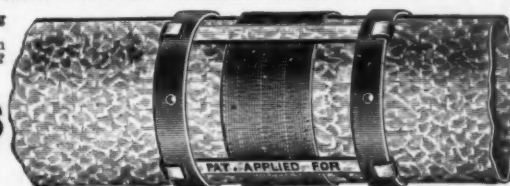
Taylor Sleeve-Gate Turbine.

Largest Power ever obtained from a wheel of the same dimensions. Are manufactured solely by us. If interested let us tell you more about them.

TALLERDAY'S SHEET STEEL WATER PIPE FOR MINE OR IRRIGATION USE.

Transportation and connecting in difficult places is EASY. Why not save a lot of money on long lines by using this pipe?

WE BUILD TANKS FOR ALL PURPOSES



Made in single sheets in lengths of 10 ft. No. 12 and lighter. Heavy Culvert Pipe a Specialty.

Write us stating requirements. **TALLERDAY STEEL PIPE & TANK CO., WATERLOO, IOWA.**

A RELIABLE WATER SUPPLY



for any and all purposes can be had if you use a **NIAGARA HYDRAULIC RAM**. Will work anywhere if there be springs, streams or running water, and will deliver from 500 to 200,000 gallons per day. In use by Pennsylvania Railroad Company and many other satisfied purchasers.

Our finely illustrated catalogue, free upon request, will fully explain the merits of our Ram, and will also show what a few of our customers think of it. Good agents wanted.

Niagara Hydraulic Engine Co., Box 78, Chester, Pa.

CAST IRON PIPE

The Dimmick Pipe Co.

Makers of **VALVES** and **HYDRANTS**. Special Castings of Every Description, Birmingham, Ala.

New York, 29 Broadway. Philadelphia, 1661 Drexel Bldg.
San Francisco, 31 New Montgomery St. St. Louis, 20 Equitable Bldg.
Pittsburg, 513 Fitzsimons Bldg.

Our Specialties:

CAST IRON PIPE, all kinds and sizes, Fire Hydrants, Gate Valves and Valve Indicator Posts, Hydraulic Tools, Steam Pumping Machinery, Gas Holders, etc. Gas Power Plants with Producers.

See Special Catalogue.

R. D. WOOD & CO.,

400 Chestnut Street, Philadelphia.

UNITED STATES CAST IRON PIPE & FOUNDRY COMPANY,

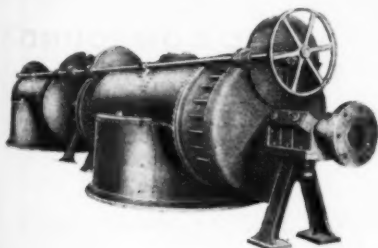
Railroad and Township Culverts, Flange Pipe and Special Castings of every description.

CAST IRON PIPE.

MANUFACTURERS OF

All Sizes, 3 to 72-in. Internal Diameter.

Gen. Offices: Chicago, Ill. Eastern Offices: Phila. Southern Offices: Chattanooga, Tenn.



SAMSON TURBINE

We build these turbines in all **SIZES** and **STYLES**, on **UP-RIGHT** or **HORIZONTAL** shafts, **BELTED** or **DIRECT CONNECTED**, **SINGLE** or in **PAIRS**. They are suitable for direct connecting to **GENERATORS**, **AIR-COMPRESSORS**, **PUMPS** or other machinery driven on horizontal shafting.

WRITE DEPT. "A-2" FOR CATALOG.

THE JAMES LEFFEL & CO., Springfield, Ohio, U. S. A.

PUMPS THICK MUD



or water that contains a large amount of grit.

The Pulsometer Steam Pump—

no fear of clogging its action.

Pulsometer Steam Pump Co.

125 Greenwich St., NEW YORK.

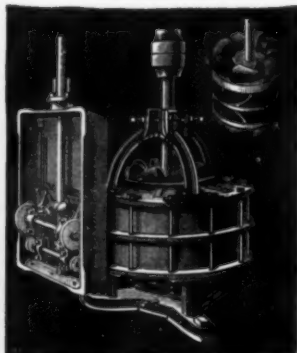
LITTLE GIANT

Turbine Water Wheel.

AT FULL GATE ITS POWER EQUALS ANY MADE. GIVES GREATER POWER AT HALF GATE THAN ANY OTHER. GATE IS ALWAYS TIGHT AND NEVER OUT OF ORDER. HAS STEADY, EASY MOVEMENT, AND NOT DIFFICULT TO START AND REGULATE. NOT EASILY CONJESTED BY ANCHOR ICE, LEAVES, STICKS, ETC., AND ANY OBSTRUCTION CAN BE REMOVED WITHOUT SHUTTING WATER OUT OF FLUME OR REMOVING WHEEL FROM CASE. ITS SIMPLE CONSTRUCTION DISPENSES WITH SKILLED MECHANICS TO KEEP IT IN ORDER.

An interesting Booklet which everyone acquainted with water wheels will value, sent on request.

MUNSON BROTHERS CO.,
Broadway, Utica, N. Y.

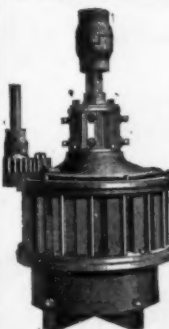


DAVIS FOUNDRY AND MACHINE WORKS.

ROME, GA.

DAVIS

Double Turbine WATER WHEEL



Beyond all question one of the Best Wheels on the market, and is fully guaranteed. We are prepared to bid on furnishing Water Wheels, etc., for complete Power Plants of any capacity. Also Gearing, Pulleys, Hangers, Shafting, etc.



W. H. BIGELOW, Agent,
Tempered and Side Ground Card Clothing.
 Tops Reclothed. Lickerins Rewound.
 12 WEST 4th STREET, CHARLOTTE, N. C.
 LONG DISTANCE PHONE. REGULAR SIZES OF CLOTHING ALWAYS IN STOCK.

Cotton Oil & Fibre Co.

Southern Office and Works:
 Norfolk, Va.

Land Title Bldg:
 Philadelphia, Pa.

Producers of

Crude and Refined Cotton Seed Oil,

Cotton Seed Cake, Hulls, Mixed Hulls,
 Linters, Etc.

Prime Cotton Seed Meal "Cofco" Brand.

Samples Free On Request. Net 100 Lbs. Fully Decorticated.

Guaranteed Analysis:

Ammonia.....	Not Less Than 0.50 Per Cent.
Nitrogen.....	" " " " " "
Protein.....	" " " " " "
Crude Oil and Fat.....	" " " " " "

THE ... Southern Hotel,

South Calvert near Baltimore Street,
 BALTIMORE, MD.

A strictly high grade European hotel
 for gentlemen.

Appointments and service the very best.

RATES:

\$1.00, \$1.50 and \$2.00, with Private Bath.

International Mercantile Agency,

346 Broadway,
 NEW YORK CITY.

A rating book which rates all merchants of the United States and Canada; no blank ratings. Estimates of capital are made within a narrower range than ever before attempted; HABIT OF PAYMENT is indicated in addition to, though absolutely independent of, the "capital, credit or standing rating." This is a vital feature heretofore uncovered by any agency book. We rate from "nothing" to ten millions and over. SPECIAL REPORTS promptly furnished.

BALTIMORE OFFICES,
 309-319 The Calvert.



Georgia Vitrified Brick & Clay Co.

Main Offices, Augusta, Ga.
 Works at Campana, Ga.

MANUFACTURERS OF

High-Grade Shale Paving Block and Brick, either repressed or un-repressed, round edge or square. We are ready to give a responsible guarantee of the splendid wearing qualities of these pavers.

We make the best Sewer Pipe in the South. All sizes, including 36" double strength Culvert Pipe.

Extra quality Fire Brick made from high-grade selected fire clays, a specialty. Special Brick made for special uses.

CAPACITY—

60,000 PAVERS PER DAY.

40,000 FIRE BRICK PER DAY.

10 CARLOADS SEWER PIPE PER DAY.

PAVING
 BRICK

SOUTHERN COTTON OIL COMPANY,

HEAD OFFICE: 11 BROADWAY, NEW YORK.

Mills and Refineries in Georgia, North and South Carolina, Alabama, Tennessee, Arkansas, Louisiana and Texas.

MANUFACTURERS OF ALL

COTTON SEED PRODUCTS.

Oil Cake and Meal, Hulls,
 Linters, Soap Stock
 and Soap.

Refiners of

COTTON OIL,

All Grades.



Manufacturers of
LARD COMPOUND
 AND
Wesson Cooking Oil.

Refineries Located at—Savannah, Augusta and Atlanta, Ga.; Charleston, S. C.; Charlotte, N. C.; Montgomery, Ala.; Houston, Tex.; New Orleans, La.; Memphis, Tenn., and Little Rock, Ark.



GOLD MEDALS
 AWARDED.

CHICAGO 1893.
 PARIS 1900.

The American Cotton Oil Company,
 27 Beaver Street, New York City.

MANUFACTURERS AND REFINERS.

COTTONSEED PRODUCTS.
 Oil, Cake, Meal, Linters, Ashes, Hulls.

GOLD
 MEDALS
 AWARDED
 BUFFALO 1901.
 CHARLESTON 1902.

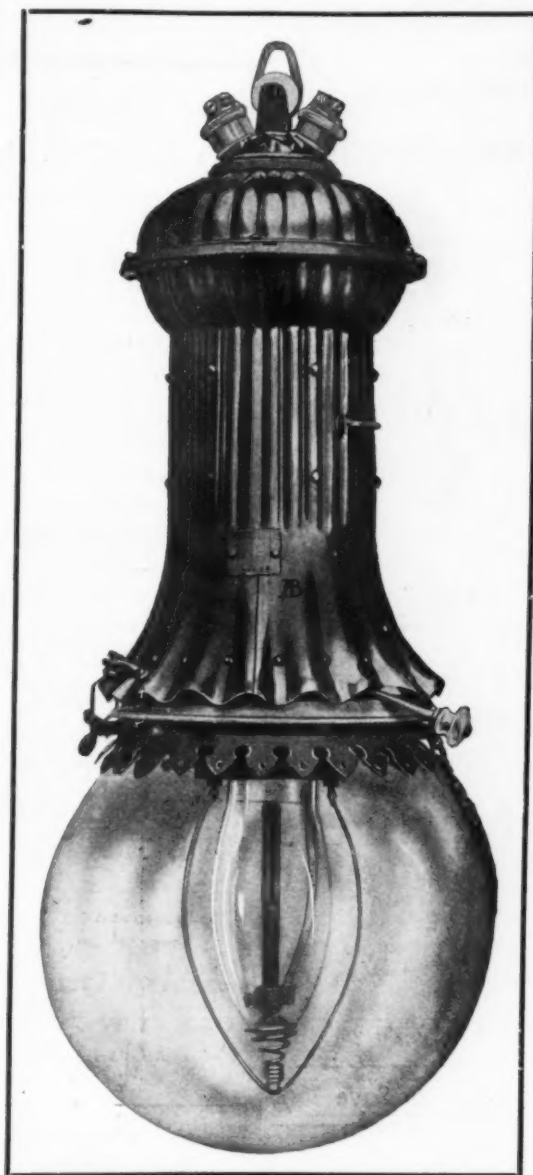


WE MANUFACTURE

ARC LAMPS

FOR ALL CIRCUITS

We Invite
Special Attention
To Our
Weatherproof,
Solid Copper Case,
Constant-Current Series
Enclosed Lamps,
For Either
Inside or Outside
Lighting.



The
Adams-Bagnall
Electric Co.

CLEVELAND, OHIO.

NEW YORK OFFICE,
(G. A. THOMSON,) 136 Liberty Street.

CHICAGO OFFICE,
(J. G. POMEROY,) 309 Dearborn Street.

SOUTHERN OFFICE IN CHARGE OF

A. J. MITCHELL,

Special Agent,

323-24 Empire Bldg., - - ATLANTA, GA.

THE GENERAL ELECTRIC COMPANY'S Machine Shop Arc Lamp



is the best helper that can be given your workmen.

Write for description

GENERAL OFFICES.

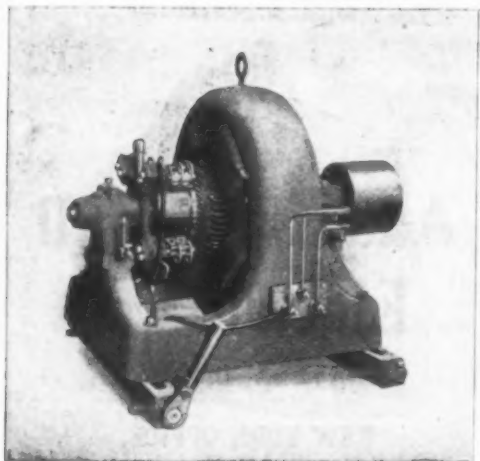
SCHENECTADY, N. Y.

New York Office, 44 Broad Street.

Sales Offices In All Large Cities.

"Ours is the Light of the World."

KENTUCKY ELECTRICAL CO., Incorporated,
MANUFACTURERS OF
Incandescent Lamps, Motors and Dynamos.
OWENSBORO, KY.



Our goods are guaranteed, our shipments prompt. We do not belong to the combine.
Write for prices.

The S. B. Alexander, Jr., Co.
Engineers and Manufacturers
CHARLOTTE, N. C.

Wholesale and Retail Electrical Supply Dealers. Largest stock of Electrical Supplies carried south of New York. TWENTY-FIVE thousand Sawyer-Man Lamps carried in stock.

Textile, Engineers', Machinists' and Electrical Supplies.

PREMIER LAMPS Will Help You to Save 20%

Prompt Shipment from Stock; delivery paid.

PIEDMONT ELECTRIC COMPANY, Electrical Material.
ASHEVILLE, NORTH CAROLINA.

**GAS, ELECTRIC
AND COMBINATION
Chandelier
Manufacturers,**
CATALOGUE ON
APPLICATION.

**CHANDELIERS FOR FINE
RESIDENCES AND LARGE
BUILDINGS**

OUR SPECIALTY.
ORIGINAL DESIGNS FURNISHED.

Chas. Polacheck & Bro. Co.
185 and 187 3d Street,
MILWAUKEE, WIS.



**"Crocker-Wheeler"
Electric Motors,**

Large or Small.
For all Purposes.

Get Our Prices Before Buying.

ELECTRIC SUPPLY CO.
SAVANNAH, GA.

If you wish to keep posted on the progress of the South, read the MANUFACTURERS' RECORD. Price \$4 a year.

RIDGWAY

DYNAMO

(Thompson-Ryan Patents),

and

Automatic Engine

(McEwen Patents),

combine the best materials, technical skill and workmanship in their construction. No machine is shipped without having undergone at least one full day's test under full-rated load. Our Illustrated Catalog gives important details of these machines.

Ridgway Dynamo & Engine Co.
RIDGWAY, PA.

J Our orders
U are constantly
climbing up
N but we can
still take
care of
all that come
us for
prices. **P** because we
have a large
stock of
E POLES & TIES
many testimonials **R** on hand
for making
from our
customers **P** prompt
shipments
THE **O** which
we pride
STANDARD **L** our-
selves
POLE & TIE CO. **E** on.
Front and Pine Sts.
New York. **S.**

**Makes Drop Lights
More Useful**

The Pacific Cord Adjuster

for adjusting the cord of drop lights. Particularly adapted to use over machines and desks where the cord must be adjusted to meet certain conditions. The balance can be easily changed for shades of different weights.

We make 35 Styles of Desk and Office Lamps.

Send for Catalogue.

PACIFIC ELECTRIC CO.
May Ave., La Crosse, Wis.



Morse Automatic Lamp Adjuster for Mills, Factories and Shops. We also manufacture the Webster Angle Adjuster, Combination Shades and Lamp Guards. Send for Illustrated Price List.
INCANDESCENT ELECTRIC LIGHT MANIPULATOR CO.
119 Bedford Street, Boston, Mass.



No Argument Necessary

If you don't buy from us
we both lose money.

**Dynamos—Motors
Arc Lamps—Telephones
Incandescent Lamps
Electrical Supplies**

**Ewing-Merkle
Electric Co.**

ST. LOUIS.

**The Alleghany Pin & Bracket
Company,**

COVINGTON, VA.

Manufacturers of

**INSULATOR PINS AND
BRACKETS.**

The largest output of any factory in America.
Write for quotations.

WHEN IN NEED OF

**Insulator Pins, Red Cedar or Chestnut
Telephone Poles, or Red Cedar
of Any Description,**

—do not fail to correspond with—

HOUSTON & LIGGETT, Lewisburg, Tenn.

S
p

Y.

ry

nes

tle

acket

A.

AND

n Ameri-

Chestnut

Cedar

th--

burg, Tenn.

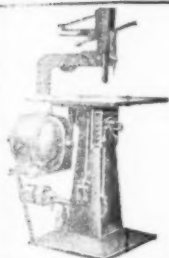


E

Southe
D
C



N



Combination Jig Saw &
Drill driven by
Triumph Motor.

Power losses are reduced to a minimum when you use

TRIUMPH MOTORS

to drive your machine tools. These can be geared or belted directly to any machine, doing away with overhead pulleys and line shafts.

You save the extra power that would otherwise be required to keep all these shafts going—shafts and belts that run whether the machines are working or not. And notice this, that in the motor drive the power supply is shut off the moment the tool stops.

Our machines are more fully described in our new Bulletin "MR 201." Ask for a copy.

Triumph Electric Company,
Cincinnati, Ohio, U. S. A.

Supplies.

FOR ELECTRIC
LIGHTING,
BELL WORK,
RAILWAYS,
TELEPHONE,
TELEGRAPH,
FIRE ALARM,
ELECTRIC PLATING,
NOVELTIES.

Construction.

WE WILL FURNISH
YOUR MILL,
SHOP OR FACTORY
WITH A
COMPLETE
ELECTRICAL
EQUIPMENT AND
GUARANTEE
OUR WORK.

Railways.

WE ARE
ELECTRICAL
ENGINEERS, AND
AS SUCH FINANCE
THE BUILDING OF
AND ALSO EQUIP
NEW
ELECTRIC
RAILWAYS.

We Keep On Hand a Full and Complete Line of

Electric Supplies.

"Everything Electric"

Standard Electric Co.

Main Office, NORFOLK, VA.

BRANCH OFFICE,
CHARLOTTE, N. C.

FLORIDA ELECTRIC CO.

Electrical and General Engineers.
JACKSONVILLE, FLA.

Southern Agents for

De Laval Steam Turbines.
Curran's Electric Elevators.

A complete line of Motors, Dynamos
and Electrical Supplies of all kinds
constantly on hand.



THE BENBOW

Adjustable Swinging Telephone Bracket.

Fits any style of 'Phone, Desk, Wall or Partition.
Endorsed and used by Telephone Companies.

For Sale by the Trade.

Write for Price List.

Agents Wanted.

THE BENBOW COMPANY,

MANUFACTURERS.

14 South Broad St.,

PHILADELPHIA, PA.



"ALL THINGS ELECTRICAL"

Largest Stock of General Supplies in South.

—Agents for—

Duncan Meter Co., Sawyer Man Inc. Lamp Co., Nernst Lamp Co.
Westinghouse Elec. & Mfg. Co. Deveau Telephone Co.

Write for our catalogue and prices.

ELECTRICAL MATERIAL CO., BALTIMORE, MARYLAND.

"RUNS LIKE A CLOCK."

Davis Gas Generators

Have Independent Power for Feeding and

FEED LUMP CARBIDE

Which Yields MORE and BETTER ACETYLENE than the Finely Crushed.

President Wiggins Ferry Co.

St. Louis, Mo., Aug. 25, 1903.

Davis Acetylene Company—The 100 lb. generator is doing very nicely indeed. The light makes the old castle look very beautiful at night. I am inclined to believe that it is a very perfect machine.

W. K. KAVANAUGH.

298 Plants Installed.

Chicago, Ill., Oct. 9, 1903.

Davis Acetylene Co.—During the past sixteen months, we have sold and installed 298 Davis generators in the State of Iowa, which are giving general satisfaction. We consider the independent power for feeding and the ability to feed lump carbide very superior features.

A. S. PHELPS, JR.

RESPONSIBLE SALESMEN WANTED.

Less Cost to the Purchaser; More Profit to the Dealer; BETTER and CHEAPER Service, than can be obtained from Electricity.

HOME, STORE, FACTORY and TOWN LIGHTING.

Send for Our New Catalog.

DAVIS ACETYLENE CO., Elkhart, Ind.

WESCO.

WESCO.

Everything Electrical

Largest and most complete stock of Electrical Supplies and Construction Material in U. S.

We can furnish anything pertaining to the construction, operation, maintenance or equipment of

Electric Railways, Isolated Plants and
Central Stations, Telephone Lines
and Exchanges.

The Wesco Supply Co.

Get Our Catalogues.

ST. LOUIS, U. S. A.

BEFORE CONTRACTING FOR

INCANDESCENT LAMPS

GET THE STERLING SPECIAL LITERATURE.

STERLING ELECTRICAL MFG. CO.

WARREN, OHIO.

Motors.

COMMERCIAL ELECTRIC COMPANY,
INDIANAPOLIS, IND.


Dynamos.



SHULTZ PATENT BELTING CO.
 SHULTZ PATENT
 WOOL LEATHER LINK BELTING
 Main Office, St. Louis, Mo. Branches: 115 N. 3d St.,
 Phila., Reverse Rubber Co., New Orleans, La.



AUTOMATIC SCALES
 Send for Catalogue
 RICHARDSON SCALE CO.
 18-22 Park Row, N. Y.



Jenkins Bros.' Valves.
 The metal and workmanship are the best. All parts are interchangeable. Need re-regulating, as they are more effectively repaired by renewing the discs, which can be easily and quickly done without removing valve from the pipe, and costs but a trifle. Insist on having the genuine, which always bear our Trade-Mark.
JENKINS BROS., New York, Boston, Philadelphia, Chicago, London.

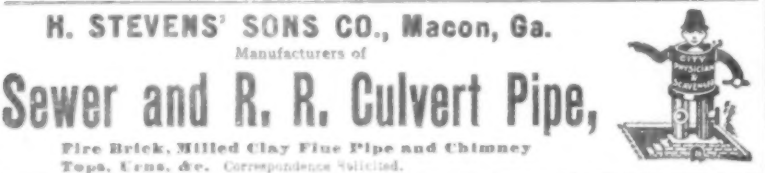


THE ALLINGTON & CURTIS DUST & SHAVINGS SYSTEM IS THE BEST
 EXHAUST FANS & BLOW PIPING FURNACE FEEDERS
"MORSE" CYCLONE DUST COLLECTORS
 MFD BY THE ALLINGTON & CURTIS MFG CO SAGINAW, MICH.
PITLESS WAGON AND STOCK SCALES.
 Complete Scale above the Ground. Steel Joist. Steel Frame. Frame 9 inches high.
 McDonald Bros., Box 515, Pleasant Hill, Mo.



Black Diamond File Works
 Established 1863. Incorporated 1895.
 Twelve Medals Awarded at International Expositions.
 Special Prize Gold Medal Atlanta, 1895.
 Our Goods are on Sale in every leading Hardware Store in the United States and Canada.
G. & H. BARNETT CO., Philadelphia, Pa.

To Manufacturers and Capitalists
 Contemplating the Establishment of Industrial Enterprises
 Attention is called to the exceptionally favorable location of
NEWPORT NEWS, VA.,
 on Hampton Roads, fifteen miles from the Sea. Deep water, railway and sea transportation facilities unrivalled. Climate salubrious. Apply to
C. B. ORCUTT, President.
 OLD DOMINION LAND COMPANY
 1 BROADWAY, NEW YORK



H. STEVENS' SONS CO., Macon, Ga.
 Manufacturers of
Sewer and R. R. Culvert Pipe,
 Fire Brick, Milled Clay Fine Pipe and Chimney
 Tops, Etc. Correspondence Solicited.



"The Standard" Scales
 FOR Cottonseed Oil Mills, Cotton Gins, Railroads, Mines, Mills, Warehouses AND ALL PURPOSES
 Used by the U. S. Government, Leading Railroads and Manufacturers.
THE STANDARD SCALE & SUPPLY CO., Limited, Manufacturers,
 PITTSBURGH, PA.



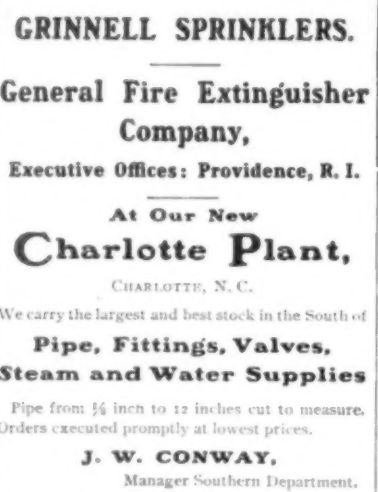
THE BALTIMORE SHIPBUILDING AND DRY DOCK CO.
 Works at Locust Point, BALTIMORE, MD.
 Shipbuilders in Iron and Steel. All kinds of Marine Repairs, Dry-Docking, ENGINEERS AND MACHINISTS.



DIXON'S FLAKE GRAPHITE



[An Up-to-Date]
Boiler Feeder
 THE **PENBERTHY**
AUTO-POSITIVE
 High Pressure. Hot Water.
 Restoring Injector.
Penberthy Injector Co.
 DETROIT, MICH.
 Largest Injector Manufacturers in the World.



GRINNELL SPRINKLERS.
General Fire Extinguisher Company,
 Executive Offices: Providence, R. I.
 At Our New **Charlotte Plant,**
 CHARLOTTE, N. C.
 We carry the largest and best stock in the South of
Pipe, Fittings, Valves, Steam and Water Supplies
 Pipe from 1/4 inch to 12 inches cut to measure. Orders executed promptly at lowest prices.
J. W. CONWAY,
 Manager Southern Department.



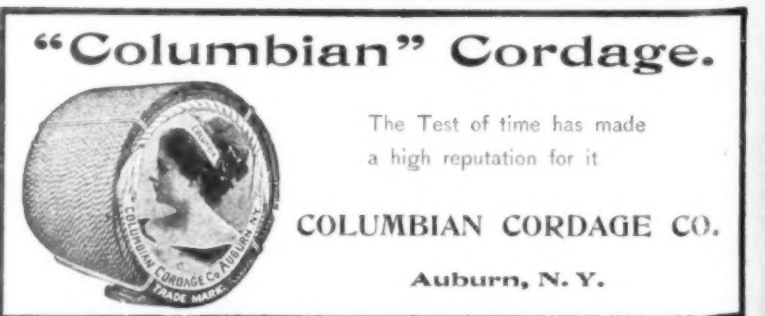
CONSOLIDATED AIR LIFT CO.
 Pneumatic Engineers,
 WASHINGTON, D. C.
 Our Air Systems of Pumping will increase your well water supply 25% to 40%. Guaranteed.
Sellers' Restarting Injector
 A strictly first class machine at moderate cost. Perfectly automatic, has wide range of capacities, and raises water promptly with hot or cold pipes. Very simple, has few parts and is easily repaired.
 All parts interchangeable, made of the best bronze, and the workmanship is perfect. Send for special catalogue descriptive of this injector.
JENKINS BROTHERS, Selling Agents
 NEW YORK, BOSTON, PHILA., CHICAGO



Osgood
 We solicit correspondence with the most particular weighers. We make a full line of heavy scales for warehouse, store and farm use. Catalogue F for asking. We can save you money. Buy Scales with **"Osgood on the beam"**
Osgood Scale Company
 Binghamton, N. Y.
"WINNERS!"
 Standard Ball-Bearing Philadelphia Casters.
 Samples and Catalogue Free
Standard Caster & Wheel Co.
 318-326 E. 23d St. NEW YORK.



Reed's Standard Pipe Wrenches
 are time savers. A man with a Reed Standard pipe wrench will often screw a pipe into place while another man equally as good is adjusting to place a chain wrench, or one that requires adjustment. This wrench adjusts itself instantly to all sizes of pipe within its capacity, gripping it firmly with the slightest downward pressure on the handle. It never slips. The harder you press down the tighter it grips, while the slightest upward pressure on the handle instantly releases it. The action of the jaws is a perfect ratchet, each grip being firm and secure. Send for our catalogue "R" of Plumbers' and Steamfitters' Tools.
REED MANUFACTURING CO., ERIE, PA.



"Columbian" Cordage.
 The Test of time has made a high reputation for it.
COLUMBIAN CORDAGE CO.
 Auburn, N. Y.



MORAN FLEXIBLE JOINT
 Used for all purposes requiring a Flexible Conveyor of Steam, Air or Liquids. Made in all sizes.
MORAN FLEXIBLE JOINT CO. (Inc.), 152 THIRD STREET, LOUISVILLE, KY.